Perceptions of Self-Determination: Examining Discrepancies and Contributing Factors

By
2019
Mayumi Hagiwara
M.S., Illinois State University, 2009
B.A., Illinois State University, 2006

Submitted to the graduate degree program in Special Education and the Graduate Faculty of the University of Kansas in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

_____

Chair: Karrie A. Shogren

_____

Evan D. Dean

_____

Matt W. Mosconi

_____

James R. Thompson

_____

Michael L. Wehmeyer

Date Defended: July 11, 2019

The dissertation committee for Mayumi Hagiwara certifies that this is the approved version of the following dissertation:

Perceptions of Self-Determination: Examining Discrepancies and Contributing Factors

_____

Chair: Karrie A. Shogren, Ph.D.

Date Approved: _____

Abstract

Self-determination emerges and develops across the life course. While self-determination is a general psychological construct relevant to all people with and without disabilities, how a person develops and expresses self-determination across the life course is influenced by various contextual factors. There are a number of studies exploring how people with disabilities and their supporters perceive self-determination for people with disabilities and how contextual factors influence their perceptions. Furthermore, the *Self-Determination Inventory: Student Report* (SDI:SR) has been recently developed and validated to measure adolescent self-determination. Many studies have examined how young people perceive their own self-determination and how contextual factors influence their perceptions using the SDI:SR. However, to date, there has been no study synthesizing existing literature on perceptions toward self-determination among people with disabilities and their supporters nor a comprehensive study examining the impact of contextual factors on self-reported self-determination of adults with disabilities. This dissertation offers a collection of works examining perceptions toward self-determination and contextual factors that influence these perceptions. Across the chapters, we offer (a) an introduction to the self-determination construct, the *Self-Determination Inventory: Adult Report* (SDI:AR), and influential contextual factors (Chapter 1), (b) a meta-synthesis of research studies exploring people's perceptions toward self-determination of people with disabilities (Chapter 2), (c) analyses of SDI:AR data examining the impact of personal factors on self-determination and its essential characteristics (Chapter 3), (d) analyses of SDI:AR data examining the impact of environmental factors on self-determination and its essential characteristics (Chapter 4), and (e) a conclusion synthesizing overall findings and considerations for future research and practice (Chapter 5).

Acknowledgments

No matter how many exclamation marks there are, I cannot show my appreciation for opportunities and supports that I have received to navigate and complete the doctoral program, especially during the dissertation phase. I would like to first express my gratitude to my adviser, Dr. Karrie Shogren, for her devotion and commitment for me to read and write more critically and to think more comprehensively. She has also taught me to stay focused till the end through countless rounds of edits. With her continuous support, I could make it to the goal line as an emerging scholar. I would like to appreciate Dr. Evan Dean as a source of wisdom to help me understand the literature I was immersed for this dissertation. I also wish to thank Dr. Matt Mosconi, whose presence as my committee member prompted me to think from different perspectives. With Dr. Jim Thompson's endless encouragement, I started and completed the doctoral program exactly 10 years after graduating from a master's program as his former student. Although I am thankful that this degree is the final one to complete, it has been a great pleasure to be his long-term student. Without Dr. Mike Wehmeyer's work on adult self-determination, my task would have been much more difficult to locate citations for this dissertation. I hope to continue linking research and practice on self-determination for adults with intellectual and developmental disabilities.

I am unquestionably thankful to have such wonderful and supportive friends at KU, especially my cohort members and fellow specialization students. You are truly my friends and colleagues. Without your encouragement, supports, and amazing insights in person and via phone every day, this doctoral program would not have been as interesting or a great source of inspiration. I hope our network of exceptional scholars will continue to inspire each other and advance the field of disability. Last but not the least, I want to thank my family, especially my sister, Mikie, who has intellectual disability but has had limited opportunities and supports to

engage in self-determined actions throughout her life in Japan. Mikie is the biggest aspiration for my career in the field of disability. I wish to show my deepest gratitude for my parents who continue to support Mikie and me in various aspects of our lives, including taking care of my child, Kazuma. I am grateful for his personality that can handle my ups and downs that I have been experiencing as a doctoral student. Yet, I hope I will be a great role model in whatever career he decides to pursue. He, too, may choose to earn a doctoral degree in a field that promotes quality of life for people across the world.

Table of Contents

List of Figures

List of Tables

Chapter 1: Introduction

People who are self-determined act as causal agents in their lives. Self-determination is a psychological construct that applies to all individuals, including people with disabilities. Engaging in self-determined actions based on one's own will is a basic human right for all people with and without disabilities (Americans with Disabilities Act, 1990; United Nations, 2006). Researchers have established a causal relationship between teaching skills associated with self-determined action and enhanced self-determination (Wehmeyer, Palmer, Shogren, Williams-Diehm, & Soukup, 2013). When there are opportunities to develop and practice skills associated with self-determination, people generally achieve positive outcomes. For example, in educational contexts, teaching skills leading to greater self-determination has been shown to lead to more positive academic goal attainment (Shogren, Palmer, Wehmeyer, Williams-Diehm, & Little, 2012) and positive social and emotional outcomes (Carter, Lane, Pierson, & Glaeser, 2006). Moreover, self-determination plays a key role in promoting more positive postschool outcomes for students with disabilities (Test et al., 2009). For example, Shogren and colleagues (2015) found that students who were more self-determined as an outcome of receiving instruction to promote self-determination had more positive employment and community outcomes up to two years after leaving school.

Therefore, having supportive contexts that provide opportunities for people with disabilities to develop, practice, and enhance skills leading to enhanced self-determination is important. At the same time, assumptions or perceptions held by others that people with disabilities, especially people with intellectual and developmental disabilities, cannot become self-determined can hinder or limit opportunities to learn and practice skills and knowledge associated with enhanced self-determination (Wehmeyer et al., 2011). For more people with disabilities to benefit from engaging in self-determined action, there is a need to further explore

where such assumptions and perceptions come from and what factors contribute to these perceptions.

Definitions of Self-Determination

In 1992, Wehmeyer proposed a definition of self-determination intended to promote a greater focus on efforts to promote the self-determination of students receiving special education services, and in 1996, Wehmeyer and colleagues published an empirical evaluation that defined characteristics of self-determined behavior, which later became known as the functional model of self-determination. The functional model of self-determination defined self-determination as "acting as the primary causal agent in one's life and making choices and decisions regarding one's quality of life free undue external influence or interference" (Wehmeyer, Kelchner, & Richards, 1996, p. 632). Recently, Shogren and colleagues (2015) reconceptualized the functional model of self-determination to align with the emergence of positive psychology, which advances the understanding of human functioning and shifts to strengths-based perspectives. According to Causal Agency Theory, self-determination is defined as a

> dispositional characteristic manifested as acting as the causal agent in one's life. Self-determined people (i.e., causal agents) act in service to freely chosen goals. Self-determined actions function to enable a person to be the causal agent is his or her life (Shogren et al., 2015, p. 258).

Causal Agency Theory defines three essential characteristics of self-determined action: (a) volitional action, (b) agentic action, and (c) action-control beliefs (Shogren et al., 2015; see Figure 1). *Volitional action* involves making a conscious choice based on one's preferences. Component constructs of volitional action are autonomy and self-initiation, and associated skills related to volitional action include choice making, decision making, goal setting, problem solving, and planning. The second essential characteristic, *agentic action*, refers to people

identifying pathways that lead to a specific end or goal. Pathways thinking, and self-direction are component constructs of agentic action, which involve the application of self-management, goal attainment, problem solving, and self-advocacy skills. The third essential characteristic is *action-control beliefs* which refers to the beliefs that one has the ability to carry out volitional and agentic actions. Component constructs within action-control beliefs include control-expectancy, psychological empowerment, and self-realization. Self-awareness and self-knowledge are skills associated with action-control beliefs.

Self-Determination across the Life Course

Self-determination emerges and develops across the life course (Brotherson, Cook, Erwin, & Weigel, 2008). Self-determination develops and is enhanced in conjunction with experiences (Abery & Stancliffe, 2003). Given this, it is essential that opportunities to learn and use the skills associated with self-determination and express self-determination are available throughout one's life, including throughout adulthood.

Childhood. During childhood, many antecedents and precursors of the development of self-determination develop, and the early development of these foundational skills associated with later self-determination play an essential role in enabling volitional and agentic action as children age (Palmer, Wehmeyer, & Shogren, 2017). Young children require supports from people in their lives (i.e., family members, teachers, community members) to engage in opportunities to develop and practice these foundational skills. For example, choice-making and problem-solving skills can be nurtured during early developmental stages. Children with disabilities may need different supports than children without disabilities. However, types and frequency of opportunities and supports available depend on environments where children with disabilities live, learn, and socialize because adults' cultural beliefs, values, and practices greatly influence how they create such environments. Especially, opportunities for children with

disabilities to make choices and solve problems can be impacted by their environments (Palmer et al., 2013). Therefore, having supportive contexts for young children to acquire skills and attitudes associated with self-determined action during early childhood is important because young children's knowledge and experiences will lead to the development of self-determination in adolescence (Palmer et al., 2017).

Adolescence. During adolescence, the dispositional characteristic of self-determination continues to develop as youth learn, enhance, and practice knowledge, skills, beliefs, and actions that enable them to navigate opportunities, experiences, and barriers that they encounter in their environment. Through this process, youth start acting as causal agents as their basic psychological needs are met resulting in autonomous motivation (Wehmeyer & Shogren, 2017). The development of essential characteristics of self-determined action across adolescence enables youth to begin to act as causal agents in their lives, which supports them to become more self-determined. For example, one of the skills associated with volitional action is choice-making. During early childhood, the expression of preferences and making choices occurs as part of developmental milestones. Then, during adolescence, skills already learned to make choices play an increasing role in decision-making, particularly with more complex decisions that emerge in adolescence.

Additionally, the development of problem-solving skills, part of the second essential characteristic (agentic action) starts during early childhood as perspective taking, planning, and understanding of social norms and activities occur. As children become older, they become more self-directed in navigating a variety of problems (i.e., social, academic) that they encounter and come up with solutions (Wehmeyer & Shogren, 2017). The development of the third essential characteristic of self-determined action, action-control beliefs, is related to control-expectancy, psychological empowerment, and self-realization. The development of action-

control beliefs evolves over time. For example, adolescents gradually learn that different contexts bring about different encounters which require different skills to navigate (Wehmeyer & Shogren, 2017). As such, the occurrence of antecedents and precursors of the development of self-determination during childhood and the development of self-determined action during adolescence enable youth to become more self-determined over time.

Adulthood. During early adulthood, young people continue to develop autonomy, which plays a key role in predicting postsecondary outcomes, including access and progress in post-secondary education for young adults with high incidence disabilities such as learning disabilities (Shogren & Shaw, 2016). Similarly, self-advocacy, problem-solving, goal-setting, and self-management--which are skills related to self-determination--are also essential for post-secondary success (Eckes & Ochoa, 2005; Finn, Getzel, & McManus, 2008; Getzel & Thoma, 2008). These skills associated with self-determination are critical not only for success in college but also for being successful in the workplace (Petcu, Chezan, & Van Horn, 2015). Overall, attaining post-secondary education and employment are highly related to self-determination, which leads to more positive adult outcomes.

More specifically, the higher self-determination status adults with intellectual disability demonstrate, the more likely they are to work and live in integrated settings (Wehmeyer & Garner, 2003). For example, after adults with intellectual and developmental disabilities received an intervention to promote self-determination, there was an increase in access to employment related to their preferences and strengths (Dean, Shogren, Wehmeyer, Almire, & Mellenbruch, 2019). Also, when adults with disabilities live more independently, they experience more positive outcomes, including enhanced feelings of empowerment (Stancliffe & Keane, 2000). Moreover, quality of life in adults with disabilities increases when their self-determination status is higher (Lachapelle et al., 2005). Throughout adulthood, adults encounter

more situations where they need to make decisions, self-manage, and problem solve in many aspects of life (i.e., finance, employment, living arrangement, relationships) that contribute to enhanced quality of life (Palmer, 2010). When considering quality of life from a life course perspective, it is necessary to examine who has opportunities to determine what defines a quality life and how one's goals and visions can be achieved through individualized supports (Schalock & Verdugo, 2014).

Less is known about self-determination in later adulthood; however, the literature on aging points out that when older people's ability to exercise self-determination decreases, there are negative consequences such as difficulty in handling stressful situations and increases in dependency to perform tasks (McCallion & Ferretti, 2017). Even if the ability to perform daily tasks independently may change due to aging, supports can still be arranged to maximize causal agency. Therefore, it is important to focus on older people's preferences and support needs to provide supports and opportunities which can continue to build their self-determination (Hammar, Dahlin-Ivanoff, Wilhelmson, & Eklund, 2014). Hence, intentional efforts by family members, support providers, and other professionals who interact or work with older people to promote self-determination become more significant (Ekelund, Dahlin-Ivanoff, & Eklund, 2014). Specifically, caregiving can include a focus on continuing to support self-determined action, even as support needs may change (McCallion & Ferretti, 2017). Adults with disabilities, as well as children and adolescents throughout the life course, need to continue to have opportunities and supports to act in a self-determined manner (Wehmeyer & Garner, 2003). In the next section, we will talk more about how contextual factors influence opportunities for and the expression of self-determination.

Contextual Factors that Influence the Expression of and Opportunities for Self-Determination

Children, youth, and adults with disabilities need to have opportunities to develop and practice knowledge, skills, and beliefs associated with self-determination and have supports to make the most of available opportunities. Such opportunities and supports might be different depending on contextual factors surrounding each person. Contextual factors are defined as personal and environmental factors that impact functioning (Shogren, Luckasson, & Schalock, 2014). Personal factors are ones that are not usually manipulated such as age, gender, race/ethnicity, culture, family, and social background. Environmental factors are those that can be altered to enhance personal outcomes such as community, organization, system, and policy and practices (Shogren et al., 2014). Abery and Stancliffe (2003) proposed the tripartite-ecological theory of self-determination which includes microsystem environmental factors such as the living arrangement (e.g., family home, own home, group home) that the person directly experiences every day and macrosystem factors such as federal and state policies and regulations that could directly or indirectly influence the choices and supports available to each person with disabilities. As such, contextual factors influence how people develop and express skills associated with self-determination (Shogren, 2013).

Culture, family background, gender, age, and cognitive ability are some of the most often discussed personal factors that impact the expression of and opportunities for self-determination (Wehmeyer et al., 2011). For example, family practices, values, and preferences are largely influenced by the culture with which families associate, which ultimately impacts what opportunities that family provides and how family promotes self-determination among children with disabilities (Shogren, 2011; Turnbull & Turnbull, 2001). In some cultures, gender as well as disability are associated with different expectations that could result in different perceptions pertaining to self-determination (Wehmeyer et al., 2011).

Other factors include age and intellectual ability. Age is known to have an impact on self-determination given the developmental nature of self-determination (Wehmeyer, Shogren, Little, & Lopez, 2017). Due to the expectation of individual growth and development of skills related to self-determination, it is expected to see self-determination change over time. Researchers have found, however, that intellectual ability is not a direct predictor of the self-determination of people with disabilities; instead, intellectual ability relates to the level of support a person needs to act in a self-determined manner (Wehmeyer et al., 2011). Also, a person's intellectual ability might influence how other people perceive the person's self-determination status. In summary, there are several key contextual factors that can impact how each person expresses self-determination and what opportunities for self-determination are supported. Moreover, these contextual factors such as intellectual ability can not only impact self-determination opportunities but also other's perceptions toward the ability of people with disabilities to be self-determined. Ongoing research is needed to further understand the ways that contextual factors impact the expression of self-determination across the life course. In the next section, we will discuss how personal and environmental factors influence people's perceptions toward self-determination of people with disabilities.

Perceptions toward Self-Determination of People with Disabilities

Factors that impact the expression of and opportunities for self-determination are also likely to influence how people understand or perceive self-determined action. For example, although research shows a relatively weak correlation between IQ and self-determination status, there is a common assumption that the self-determination of people with intellectual and developmental disabilities could be limited due to their extensive support needs (Wehmeyer et al., 2011; Wehmeyer & Bolding, 1999). Carter and colleagues (2010) examined perceptions of self-determination held by students with disabilities and their teachers using the *AIR Self-*

Determination Scale (Wolman, Campeau, Dubois, Mithaug, & Stolarski, 1994) and found that teachers reported the self-determination capacity of students with learning disabilities highest, students with emotional and behavioral disorders second, and students with intellectual disability lowest. However, there were no significant differences among students' ratings of their own self-determination capacity. These results clearly indicate discrepancies in how teacher perceive expressions of self-determination based on disability status. Similarly, there are discrepancies among how various stakeholders perceive the self-determination of children and youth with disabilities. Researchers have found differences in perceptions of general and special educators (Cho, Wehmeyer, & Kingston, 2011; Mithaug, Campeau, & Wolman, 2003), and parents and teachers (e.g., Grigal, Neubert, Moon, & Graham, 2003).

Moreover, culture is another prominent variable that can influence people's perceptions of the development and expression of self-determination. Zhang (2005) found differences in perceptions toward self-determination among parents from different cultures. Caucasian parents tended to value their children's personal independence more than Asian and African American parents. Also, there were significant differences between first-generation immigrant and nonimmigrant parents toward values related to self-determination.

Although, as introduced above, there are studies examining people's perceptions that show clear discrepancies among stakeholders (e.g., students with disabilities, family members, school professionals), there has not been a synthesis of these studies to examine similarities and differences in self- and other-respondents' perceptions and possible contextual factors that contribute to these differences in perceptions. Therefore, Chapter 2 of this dissertation focuses on identifying similarities and differences in perceptions as well as examining how contextual factors influence these different perceptions.

Key to understanding perceptions is having reliable and valid self-determination assessments that can be used to assess self- and other-perceptions of self-determination of people with disabilities. Therefore, in the following section, we will describe self-determination assessments that have been developed to measure global self-determination, focusing on evolution of these assessments over time and the importance of these assessments for understanding varying stakeholder perceptions of self-determination. We will also highlight ongoing research needs related to self-determination assessments, introducing the focus of Chapters 3 and 4 of this dissertation.

Assessments of Self-Determination

As a dispositional characteristic, self-determination is an enduring characteristic that can be measured and can change over time as people have opportunities to exercise and enhance the essential characteristics of self-determined action (Shogren & Wehmeyer, 2017a). Two assessments were developed in the 1990s to measure global self-determination which are *The Arc's Self-Determination Scale* (Wehmeyer & Kelchner, 1995) and the *American Institutes for Research (AIR) Self-Determination Scale* (Wolman et al., 1994). *The Arc's Self-Determination Scale* is a self-report measure, including 72 items based on the functional theory of self-determination by Wehmeyer (1996). The *American Institutes for Research (AIR) Self-Determination Scale* has three different versions: Student, including 24 questions, Educator, including 30 questions, and Parent, including 18 questions, which were developed based on self-determined learning theory (Mithaug, 1993). Researchers have used these assessments to examine the relationship between self-determination and student outcomes (e.g., Wehmeyer et al., 2013) and adult outcomes (e.g., Lachapelle et al., 2005; Wehmeyer & Garner, 2003).

Recently, the *Self-Determination Inventory: Student Report* (SDI:SR; Shogren & Wehmeyer, 2017b) was developed to align with Causal Agency Theory and to meet the increased need for self-determination assessments available online with comprehensive

accessibility and reporting features to promote access and engagement by adolescents with and without disabilities in inclusive settings (Shogren, Shaw, Raley, & Wehmeyer, 2018b). The SDI:SR is a self-report measure and was validated for young people ages 13 to 22. It includes 21 items asking young people questions about how they feel about their ability to make choices, set and attain goals. However, the need to measure self-determination does not end after young people enter adulthood, which led to another need to develop an assessment of self-determination for adults. Therefore, the *Self-Determination Inventory: Adult Report* (SDI:AR) was developed to specifically target the adult population, and initial psychometrics were recently examined with adults with and without disabilities ages 18 and older (Shogren, Hagiwara, & Rifenbark, 2019).

After extensive review and consultation with stakeholders of the 21 items on the SDI:SR, the decision was made to utilize the same items on the SDI:AR as they are context-neutral and have applicability across adolescence and adulthood (Shogren et al., 2019). Both the SDI:SR and SDI:AR are available on the same online platform, although certain features (e.g., instructions) and embedded demographic items of the SDI:AR were updated for adult roles and responsibilities. It was hypothesized that using the same set of items could enable meaningful comparison of self-determination throughout adolescence and into adulthood.

On the SDI:SR, researchers have examined the impact of personal factors, including age, gender, race/ethnicity, disability status, and socioeconomic status (Shogren, Shaw, Raley, & Wehmeyer, 2018a, 2018b). These studies show that personal factors have an impact on SDI:SR scores. For example, when examining the degree to which age and gender influenced SDI:SR scores when taking race/ethnicity and disability status into account, females with no disability or learning disabilities scored lower than males in general (Shogren et al., 2018b). The impact of contextual factors has not yet been explored on the SDI:AR; therefore, there is a need for studies to understand how contextual factors impact self-determination in adulthood.

Purpose of this Dissertation: Perceptions toward Self-Determination

Thus far, we have discussed the development of self-determination across the life course as well as contextual factors that can impact the expression of self-determination and how various stakeholders perceive self-determination. We have also described self-determination assessments that have been used to examine perceptions toward self-determination of youth and adults with disabilities from their own perspectives as well as the perspectives of others. Moreover, we have emphasized the importance of acknowledging how key supporters (e.g., family members, school professionals) are critical part of contexts, given their role in providing supports and opportunities for self-determination. As such, the purpose of this dissertation was to examine how contextual factors influenced the perceptions and the expressions of self-determination in people with disabilities across the life course. Specifically, to achieve this purpose, three separate studies were conducted. First, was a meta-synthesis of research studies (e.g., quantitative, qualitative) that have examined perceptions of people (e.g., people with disabilities, family members, school professionals) pertaining to the self-determination of youth and adults with disabilities to explore similarities and differences among various stakeholders' perceptions of self-determination. When differences emerged, contextual factors that made an impact were categorized. Second, data from the validation study of the SDI:AR were analyzed, focusing on the impact of personal factors: age, gender, and disability label on overall self-determination and the SDI:AR items in adults with and without disabilities. Third, data from the validation process of the SDI:AR were analyzed, examining the impact of environmental factors: levels of education attainment, employment status, living arrangement, and presence of a legal guardian on overall self-determination and the SDI:AR items in adults with intellectual and developmental disabilities. Findings from this dissertation will advance our understanding of possible mechanisms behind discrepancies in perceptions of self-determination across the life

course. The findings can promote alignment in understandings of self-determination and interventions to enhance self-determination for people with disabilities. Furthermore, by identifying how contextual factors impact the expression of self-determination in people with disabilities across the life course, we can be better informed when developing and individualizing intervention and supports for self-determination of people with disabilities within specific contexts.

References

Abery, B. H., & Stancliffe, R. J. (2003). An ecological theory of self- determination: Theoretical foundations. In M. L. Wehmeyer, B. H. Abery, D. E. Mithaug, & R. J. Stancliffe (Eds.), *Theory in self-determination: Foundations for educational practice* (pp. 25-42). Springfield, IL: Thomas.

Americans With Disabilities Act of 1990, Pub. L. No. 101-336, 104 Stat. 328 (1990).

Brotherson, M. J., Cook, C. C., Erwin, E. J., & Weigel, C. J. (2008). Understanding self-determination and families of young children with disabilities in home environments. *Journal of Early Intervention, 31*, 22-43. doi:10.1177/1053815108324445

Carter, E. W., Lane, K. L., Pierson, M. R., & Glaeser, B. (2006). Self-determination skills and opportunities of transition-age youth with emotional disturbance and learning disabilities. *Exceptional Children, 72*, 333-346. doi:10.1177/001440290607200305

Carter, E. W., Trainor, A., Owens, L., Sweden, B., & Sun, Y. (2010). Self-determination prospects of youth with high-incidence disabilities: Divergent perspectives and related factors. *Journal of Emotional and Behavioral Disorders, 18*, 67-81. doi:10.1177/1063426609332605

Cho, H. J., Wehmeyer, M., & Kingston, N. (2011). Elementary teachers' knowledge and use of interventions and barriers to promoting student self-determination. *The Journal of Special Education, 45*, 149-156. doi:10.1177/0022466910362588

Dean, E. E., Shogren, K. A., Wehmeyer, M. L., Almire, B., & Mellenbruch, R. (2019). Career design and development for adults with intellectual disability: A program evaluation. *Advances in Neurodevelopmental Disorders, 3,* 111-118. doi:10.1007/s41252-018-0080-6

Eckes, S. E., & Ochoa, T. A. (2005). Students with disabilities: Transitioning from high school to higher education. *American Secondary Education, 33*, 6-20.

Ekelund, C., Dahlin-Ivanoff, S., & Eklund, K. (2014). Self-determination and older people - A concept analysis. *Scandinavian Journal of Occupational Therapy, 21*, 116-124.

Finn, D., Getzel, E. E., & McManus, S. (2008). Adapting the Self-Determined Learning Model of Instruction for college students with disabilities. *Career Development for Exceptional Individuals, 31*, 85-93. doi:10.1177/0885728808318327

Grigal, M., Neubert, D. A., Moon, M. S., & Graham, S. (2003). Self-determination for students with disabilities: Views of parents and teachers. *Exceptional Children, 70*, 97-112.

Hammar, I. O., Dahlin-Ivanoff, S., Wilhelmson, K., & Eklund, K. (2014). Shifting between self-governing and being governed: A qualitative study of older persons' self-determination. *BMC Geriatrics, 14*, 126. doi:10.1186/1471-2318-14-126

Lachapelle, Y., Wehmeyer, M. L., Haelewyck, M.-C., Courbois, Y., Keith, K. D., Schalock, R., . . . Walsh, P. N. (2005). The relationship between quality of life and self-determination: an international study. *Journal of Intellectual Disability Research, 49*, 740-744. doi:10.1111/j.1365-2788.2005.00743.x

Leake, D., & Boone, R. (2007). Multicultural perspectives on self-determination from youth, parent, and teacher focus groups. *Career Development for Exceptional Individuals, 30*, 104-115. doi:10.1177/08857288070300020101

McCallion, P., & Ferretti, L. A. (2017). Understanding, supporting and safeguarding self-determination as we age. In M. L. Wehmeyer, K. A. Shogren, Little, T. D., & Lopez, S. J. (Eds.), *Development of self-determination through the life-course* (pp. 145-158). Dordrecht, The Netherlands: Springer. doi:10.1007/978-94-024-1042-6_11

Mithaug, D. E. (1993). *Self-regulation theory: How optimal adjustment maximizes gain*. Westport, CT: Praeger Publishers/Greenwood Publishing Group.

Mithaug, D. E., Campeau, P. L., & Wolman, J. M. (2003). Assessing self-determination prospects among students with and without disabilities. In D. E. Mithaug, D. K. Mithaug, A. Agran, J. E. Martin, & M. L. Wehmeyer (Eds.), *Self-determined learning theory: Construction, verification, and evaluation* (pp. 61-76). London, United Kingdom: Routledge

Mumbardó-Adam, C., Guàrdia-Olmos, J., Giné, C., Raley, S. K., & Shogren, K. A. (2018). The Spanish version of the Self-Determination Inventory Student Report: Application of item response theory to self-determination measurement. *Journal of Intellectual Disability Research, 62*, 303-311. doi:10.1111/jir.12466

Palmer, S. (2010). Self-determination: A life-span perspective. *Focus on exceptional children, 42*, 1-16.

Palmer, S. B., Summers, J. A., Brotherson, M. J., Erwin, E. J., Maude, S. P., Stroup-Rentier, V., . . . Haines, S. J. (2013). Foundations for self-determination in early childhood: An inclusive model for children with disabilities. *Topics in Early Childhood Special Education, 33*, 38-47. doi:10.1177/0271121412445288

Palmer, S. A., Wehmeyer, M. L. & Shogren, K. A. (2017). The development of self-determination during childhood. In M. L. Wehmeyer, K. A. Shogren, Little, T. D., & Lopez, S. J. (Eds.), *Development of self-determination through the life-course* (pp. 71-88). Dordrecht, The Netherlands: Springer. doi:10.1007/978-94-024-1042-6_6

Petcu, S. D., Chezan, L. C., & Van Horn, L. M. (2015). Employment support services for students with intellectual and developmental disabilities attending postsecondary education programs. *Journal of Postsecondary Education and Disability, 28*, 359-374.

Schalock, R. L., & Verdugo, M. A. (2014). Quality of life as a change agent. *International Public Health Journal, 6*, 105.

Shogren, K. A. (2011). Culture and self-determination: A synthesis of the literature and directions for future research and practice. *Career Development for Exceptional Individuals, 34*, 115-127. doi:10.1177/0885728811398271

Shogren, K. A. (2013). A social-ecological analysis of the self-determination literature. *Intellectual and Developmental Disabilities, 51*, 496-511. doi:10.1352/1934-9556-51.6.496

Shogren, K. A., Hagiwara, M., & Rifenbark, G. G. (2019). *Examining the psychometrics of the Self-Determination Inventory: Adult Report in adults intellectual and developmental disabilities.* Manuscript in preparation.

Shogren, K. A., Little, T. D., Grandfield, E., Raley, S., Wehmeyer, M. L., Lang, K. M., & Shaw, L. A. (2018). The Self-Determination Inventory–Student Report: Confirming the factor structure of a new measure. *Assessment for Effective Intervention*, Advance online publication. doi:10.1177/1534508418788168

Shogren, K. A., Luckasson, R., & Schalock, R. L. (2014). The definition of "context" and its application in the field of intellectual disability. *Journal of Policy and Practice in Intellectual Disabilities, 11*, 109-116. doi:10.1111/jppi.12077

Shogren, K. A., Palmer, S. B., Wehmeyer, M. L., Williams-Diehm, K., & Little, T. D. (2012). Effect of intervention with the Self-Determined Learning Model of Instruction on access and goal attainment. *Remedial and Special Education, 33*, 320-330. doi:10.1177/0741932511410072

Shogren, K. A., Raley, S. K., Anderson, M. H., & Hagiwara, M. (2018). *Comparability of student and proxy scores on the self-determination inventory*. Manuscript submitted for publication.

Shogren, K. A., Raley, S. K., Burke, K. M., & Wehmeyer, M. L. (2018). *The Self-Determined Learning Model of Instruction: Teacher's guide*. Lawrence, KS: Kansas University Center on Developmental Disabilities.

Shogren, K. A., & Shaw, L. A. (2016). The role of autonomy, self-realization, and psychological empowerment in predicting outcomes for youth with disabilities. *Remedial and Special Education, 37*, 55-62. doi:10.1177/0741932515585003

Shogren, K. A., Shaw, L. A., Raley, S. K., & Wehmeyer, M. L. (2018a). Exploring the effect of disability, race-ethnicity, and socioeconomic status on scores on the Self-Determination Inventory: Student Report. *Exceptional Children, 85*, 10-27. doi:0014402918782150.

Shogren, K. A., Shaw, L. A., Raley, S. K., & Wehmeyer, M. L. (2018b). The impact of personal characteristics on scores on the Self-Determination Inventory: Student report in adolescents with and without disabilities. *Psychology in the Schools, 55*, 1013-1026. doi:10.1002/pits.22174

Shogren, K. A., & Wehmeyer, M. L. (2017a). Self-determination and goal attainment. In M. L. Wehmeyer & K. A. Shogren (Eds.), *Handbook of research-based practices for educating students with intellectual disability* (pp. 255-273). New York, NY: Routledge.

Shogren, K. A., & Wehmeyer, M. L. (2017b). *Self-Determination Inventory: Student Report*. Lawrence, KS: Kansas University Center on Developmental Disabilities.

Shogren, K. A., Wehmeyer, M. L., Palmer, S. B., Forber-Pratt, A. J., Little, T. J., & Lopez, S. (2015). Causal agency theory: Reconceptualizing a functional model of self-determination. *Education and Training in Autism and Developmental Disabilities, 50*, 251-263.

Stancliffe, R. J., & Keane, S. (2000). Outcomes and costs of community living: A matched comparison of group homes and semi-independent living. *Journal of Intellectual and Developmental Disability, 25*, 281-305.

Test, D. W., Mazzotti, V. L., Mustian, A. L., Fowler, C. H., Kortering, L., & Kohler, P. (2009). Evidence-based secondary transition predictors for improving postschool outcomes for students with disabilities. *Career Development for Exceptional Individuals, 32*, 160-181. doi:10.1177/0885728809346960

The United Nations. (2006). Convention on the Rights of Persons with Disabilities. *Treaty Series*, *2515*, 3.

Thoma, C. A., & Getzel, E. E. (2005). "Self-determination is what it's all about": What post-secondary students with disabilities tell us are important considerations for success. *Education and Training in Developmental Disabilities, 40*, 234-242.

Trainor, A. A. (2005). Self-determination perceptions and behaviors of diverse students with LD during the transition planning process. *Journal of Learning Disabilities, 38*, 233-249. doi:10.1177/00222194050380030501

Turnbull, A., & Turnbull, R. (2001). Self-determination for individuals with significant cognitive disabilities and their families. *Journal of the Association for Persons with Severe Handicaps, 26*, 56-62.

Wehmeyer, M. (1996). Student self-report measure of self-determination for students with cognitive disabilities. *Education and Training in Mental Retardation and Developmental Disabilities, 31*, 282-293.

Wehmeyer, M. L., Abery, B. H., Zhang, D., Ward, K., Willis, D., Hossain, W. A., . . . Calkins, C. (2011). Personal self-determination and moderating variables that impact efforts to

promote self-determination. *Exceptionality, 19*, 19-30. doi:10.1080/09362835.2011.537225

Wehmeyer, M. L., & Bolding, N. (1999). Self-determination across living and working environments: A matched-samples study of adults with mental retardation. *Mental Retardation, 37*, 353-363. doi:10.1352/0047-6765(1999)037<0353:Salawe>2.0.Co;2

Wehmeyer, M. L., & Bolding, N. (2001). Enhanced self-determination of adults with intellectual disability as an outcome of moving to community-based work or living environments. *Journal of Intellectual Disability Research, 45*, 371-383. doi:10.1046/j.1365-2788.2001.00342.x

Wehmeyer, M. L., & Garner, N. W. (2003). The impact of personal characteristics of people with intellectual and developmental disability on self-determination and autonomous functioning. *Journal of Applied Research in Intellectual Disabilities, 16*, 255-265. doi:10.1046/j.1468-3148.2003.00161.x

Wehmeyer, M. L., & Kelchner, K. (1995). *The Arc's Self-Determination Scale*. Arlington, TX: The Arc National Headquarters.

Wehmeyer M. L., Kelchner K., & Richards. S. (1996). Essential characteristics of self-determined behaviors of adults with mental retardation and developmental disabilities. *American Journal on Mental Retardation, 100*, 632-642.

Wehmeyer, M. L., Palmer, S. B., Shogren, K., Williams-Diehm, K., & Soukup, J. H. (2013). Establishing a causal relationship between intervention to promote self-determination and enhanced student self-determination. *The Journal of Special Education, 46*, 195-210. doi:10.1177/0022466910392377

Wehmeyer, M. L., & Shogren, K. A. (2017). The development of self-determination during adolescence. In M. L. Wehmeyer, K. A. Shogren, Little, T. D., & Lopez, S. J. (Eds.),

Development of self-determination through the life-course (pp. 89-98). Dordrecht, The Netherlands: Springer. doi:10.1007/978-94-024-1042-6_7

Wehmeyer, M. L., Shogren, K. A., Little, T. D., & Lopez, S. J., (Eds.). (2017). *Handbook on the development of self-determination*. New York, NY: Springer.

Wolman, J., Campeau, P., Dubois, P., Mithaug, D., & Stolarski, V. (1994). *AIR Self-Determination Scale and user guide*. Palo Alto, CA: American Institute for Research.

Zhang, D. (2005). Parent practices in facilitating self-determination skills: The influences of culture, socioeconomic status, and children's special education status. *Research and Practice for Persons with Severe Disabilities, 30*, 154-162.

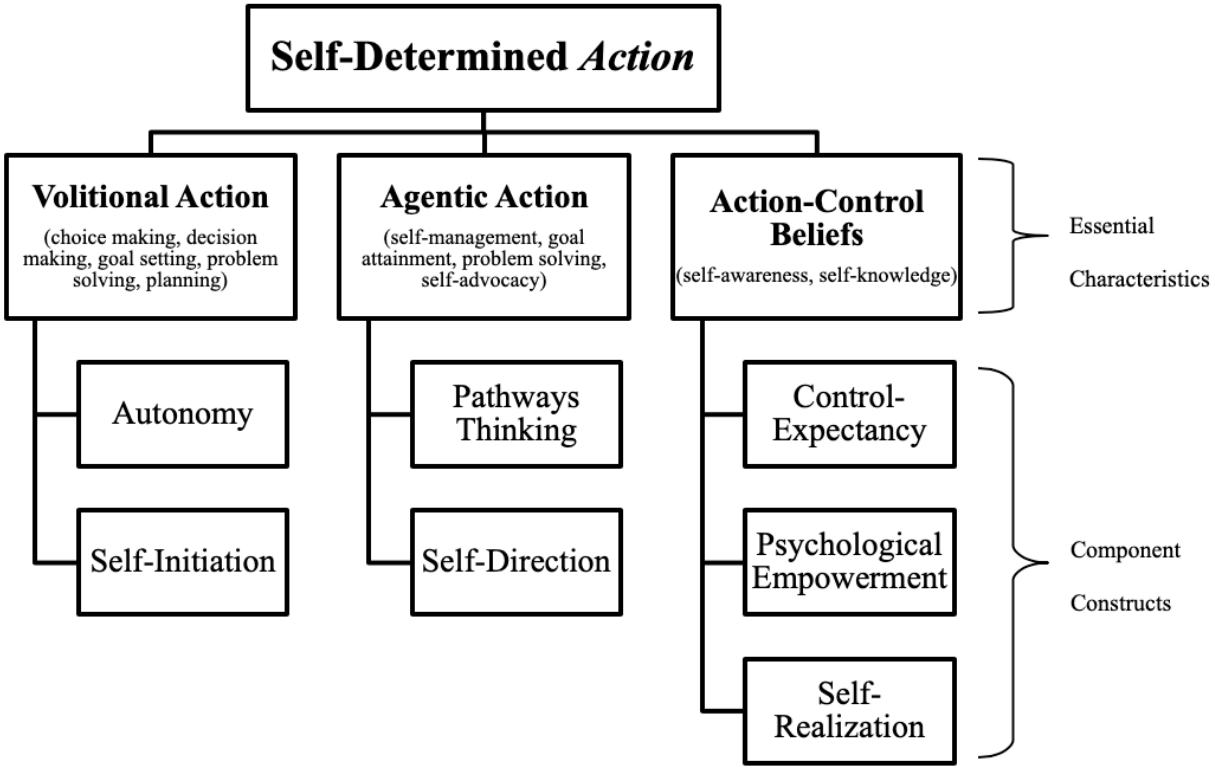

Figure 1. Self-Determined Action Framework.

Reprinted with permission from Shogren, Raley, Burke, & Wehmeyer, (2018)

Chapter 2: Examining Perceptions about Self-Determination and People with Disabilities: A Meta-Synthesis

People with disabilities have the potential, as do all people, to develop skills associated with self-determined action when supports and opportunities, aligned to their strengths and values, are provided in the environments in which they live, learn, work, and socialize. Acting in a self-determined manner enables people to act or cause things to happen in their life (Shogren, Wehmeyer, Palmer, Forber-Pratt, et al., 2015). According to Causal Agency Theory, self-determination is defined as:

> a dispositional characteristic manifested as acting as the causal agent in one's life. Self-determined people (i.e., causal agents) act in service to freely chosen goals. Self-determined actions function to enable a person to be the causal agent is his or her life (Shogren, Wehmeyer, Palmer, Forber-Pratt, et al., 2015, p. 258).

Self-determination emerges across a person's life course and plays an important role in many aspects and stages of a person's life (Brotherson, Cook, Erwin, & Weigel, 2008). A number of studies have indicated a causal relationship between teaching skills associated with self-determination (i.e., choice-making, decision-making, problem solving, planning, goal setting and attainment, self-management, self-advocacy, self-awareness, and self-knowledge) and enhanced self-determination. For example, researchers have found that higher self-determination status upon high school graduation leads to more positive employment and community access outcomes for students with disabilities up to two years postschool (Shogren, Wehmeyer, Palmer, Rifenbark, & Little, 2015). Furthermore, adults with higher self-determination report more positive outcomes, including higher quality of life (Lachapelle et al., 2005) and employment and integrated community living and participation (Wehmeyer & Garner, 2003).

However, while self-determination is a general psychological construct relevant to all people with and without disabilities, how a person expresses self-determination is influenced by contextual factors, including personal factors (e.g., age, gender, disability) and environmental factors (e.g., culture, family background, available supports) (Shogren & Wehmeyer, 2017a). As the expression of and opportunities for self-determination differ, how a person perceives their own self-determination can vary based on multiple contextual factors. Also, how other people perceive the person's self-determination is influenced by these contextual factors.

Contextual Factors that Impact People's Perceptions of Self-Determination

Context is defined as "an integrative concept that provides a framework for describing personal and environmental factors, supports planning, and policy development" (Shogren, Luckasson, & Schalock, 2014, p. 111). Personal factors are not usually manipulated through self-determination interventions and include age, gender, race/ethnicity, culture, family, and social background. Environmental factors are those that can be manipulated to enhance self-determination and personal outcomes such as community, organization, system, and policy and practices (Shogren et al., 2014). As noted, contextual factors can influence how one understands or perceives self-determination of oneself or others. By understanding contextual factors, intervention to promote self-determination can be designed and individualized to align with personal and environmental factors. For example, although teaching skills associated with self-determination has been shown to enhance self-determination of children, youth, and adults with disabilities, a variety of contextual factors impact access to opportunities and supports to capitalize on this instruction and utilize it in meaningful ways (Wehmeyer et al., 2011). By understanding these factors, and how they impact people with disabilities and those that support them, better design and individualization of self-determination intervention can be achieved.

Researchers have begun to examine how personal and environmental factors play influential roles in perceptions toward self-determination of people with disabilities. For example, personal culture influences how we perceive, interpret, and engage in beliefs and actions through the lens of particular cultures with which each of us associates (Shogren & Wehmeyer, 2017a). Because we orient our sense of ourselves through our cultural beliefs (Shogren & Wehmeyer, 2017a; Trainor, Lindstrom, Simon-Burroughs, Martin, & Sorrells, 2008), culture is a significant factor in how we perceive, interpret, and engage in skills associated with self-determination. Another personal factor, age, has an impact on self-determination given the developmental nature of self-determination (Wehmeyer, Shogren, Little, & Lopez, 2017). Further, researchers have consistently found that disability status influences others' perceptions about the self-determination of people with disabilities. For example, there are clear discrepancies among youth with disabilities, their families, and teachers in terms of how they report on youth's capacities for engaging in self-determined behavior that are associated with a youth's disability label (Carter, Trainor, Owens, Sweden, & Sun, 2010). These differing perceptions based on culture, age, and disability shape the life experiences and opportunities (environmental factors) that people have to develop self-determination, particularly in the implementation of policies and practices that support, or do not effectively support self-determination.

Overall, the existing research suggests that a complex array of contextual factors influences how people with disabilities themselves and key supporters in their lives view self-determination. To date, however, there has been no comprehensive meta-synthesis examining the overall trends of similarities and differences within and across studies in perceptions of self-determination to identify key contextual factors that shape such differences in people with disabilities and those that support them. Findings from such a meta-synthesis could identify ways

to asses, integrate, and capitalize on self- and others' perceptions toward self-determination as well as to consider how to utilize discrepant perspectives when implementing and evaluating interventions to promote self-determination. Therefore, the purpose of the meta-synthesis was to explore similarities and differences among various stakeholders' perceptions of self-determination. When differences emerged, we categorized contextual factors that made an impact. Research questions for this study were as follows:

1. What are the perceptions of self-determination for people with disabilities across the life course as reported by people with disabilities, family members, school professionals, and others who interact with people with disabilities?
2. What are similarities and differences in perceptions of stakeholders?
3. What contextual factors (personal and environmental factors) play a role in perceptions and do these contextual factors vary based on type of respondent?

Method

Inclusion Criteria

There were four criteria for studies to be included in this meta-synthesis. First, studies needed to be peer-reviewed, written in English, and focus on investigating perceptions of the self-determination of children, youth, or adults with disabilities. No specific disability label or age of a person with disabilities nor a specific relationship type (e.g., parent, teacher) were included in search strings. Second, the range of years of publication was 1997 to 2018. Because there was no previous meta-synthesis on this topic, a specific year to start in this meta-synthesis was not available. The decision to start the search from the year of 1997 was because this is one year after Wehmeyer and colleagues operationalized the functional model of self-determination to measure personal self-determination, which was a major advancement in the field. Additionally, including studies published over the past 20 years allowed for the examination of

changes in people's perceptions about self-determination of people with disabilities. Third, both qualitative (e.g., interviews, focus group) and quantitative studies (e.g., survey, assessments) were included in this synthesis as long as studies explored perceptions of self-determination. Fourth, in order to facilitate consistency in study comparisons, studies had to focus on the overall self-determination of a person with disabilities not simply a specific skill associated with self-determination (e.g., decision-making, choice-making, self-advocacy).

Literature Search Procedure

Studies were identified using three strategies. First, the following search strings were utilized (a) self-determination AND perception* AND disabilit*, (b) self-determination AND attitude* AND disabilit*, (c) self-determination AND perspective* AND disabilit*, and (d) self-determination AND belief* AND disabilit*. Four different words (perception, attitude, belief, and perspective) were chosen because these words emerged within an initial examination of the literature related to this topic as published in peer-reviewed journals. ERIC and PsycInfo databases were used to identify studies. After removing duplications and screening each title and abstract, and full-texts as needed to determine inclusion, the body of literature was narrowed to 36 articles. Next, an ancestral search was conducted by looking at titles of references for the included articles, and if these titles included any of the search stings, their abstracts were reviewed as well as full-texts when necessary. This resulted in five additional articles, and in the end, a total of 41 articles were identified. Figure 1 shows the specific procedures used to obtain the included articles.

Study Coding

According to Brown (2017), "metasynthesis is a form of research integration study in which secondary analyses are performed on relevant, extant (often qualitative) empirical literature to address a particular research question" (p. 1148). The focus of meta-synthesis is to

provide a more comprehensive picture of a specific phenomenon than what individual studies can offer by using findings from these individual studies (Brown, 2017; Timulak, 2014). As a first step in our meta-synthesis, we developed a coding sheet to capture multiple dimensions of each study. We coded for respondent characteristics, including the number of respondents, the type of relationship respondents have to a person with disabilities, age, gender, race/ethnicity, and disability labels. Dimensions of studies that were coded included research design (e.g., quantitative, qualitative), contexts of where a person with disabilities and respondents were located or interacted (e.g., home, K-12 school, postsecondary education), and research tools utilized (e.g., survey, interview).

More importantly, to synthesize study findings and address our research questions, each included study's purpose of study, research questions, key findings and contextual factors addressed. Because the included studies shared inter-related topics (Brown, 2017), based on the purposes and research questions, we systematically identified common themes and contextual factors that were explored across the studies. Specifically, after recording the key findings from each study, we then integrated these finding to identify general themes. The articles and the key findings were iteratively re-read to further define these themes and to add new themes to the list as well as to define the contextual factors that were addressed within these themes. As a result, four key themes emerged, including importance, definitions of, opportunities for, and barriers to self-determination (see Table 2). Concurrently, similarities and differences in respondents' perceptions of self-determination of people with disabilities and contributing contextual factors to such differences among the findings were coded and analyzed to determine common factors.

Interrater Reliability

To determine interrater reliability of article inclusion procedures, 25% of the 36 studies (n = 9; every four articles listed in chronological order) in Figure 1 were reviewed by a second

coder. When titles and abstracts were not sufficient to determine inclusion, full-texts were reviewed as well. The interrater reliability for the inclusion of articles was 100%. Then, to examine interrater reliability of coding procedures, 25% of the 41 studies (n = 10) in Figure 1 were also reviewed by the same second coder. Agreement were established when the two coders agreed across all dimensions on the coding sheets. To calculate interrater reliability, the number of agreements was divided by the sum of the number of agreements and disagreements, then was multiplied by 100. Agreement for coding procedures was 89%, when there was disagreement the coding was reviewed again and discussed until consensus was obtained.

Results

There was a total of 41 studies examining perceptions of self-determination for people with disabilities across the life course as reported by people with disabilities, family members, school professionals, and higher education faculty or students. Even though we did not constrain to any specific respondent type, these were the only respondent groups across the included studies. Although the range of included years of publication was 1997 to 2018, there were no studies that met the inclusion criteria in 1997, 1998, and 2001. The year which had the highest number of the studies was 2011 (n = 6). In the following sections, we provide an overview of respondent characteristics and study characteristics across the studies. Next, we will present key themes organized by respondent types. Finally, contextual factors contributing to similarities and differences in perspectives will be discussed.

Respondent Characteristics

The total number of respondents across the 41 studies was 9,268. Special education teachers were the most frequent respondents (n = 3,185; 34.4%), followed by family members (n = 1,807; 19.5%) and general education teachers (n = 1,677; 18.1%). This was influenced by a few large studies focused on teacher and family perspectives (e.g., Zhang, Wehmeyer, & Chen,

2005). There were 351 people with disabilities that provided their own perspectives (3.8%). Among respondents with disabilities, they were either high school students or adults up to 51 years old; however, demographic details were not provided for approximately 40% of the people with disabilities included. For those with disabilities that demographic data was available, the most frequent race/ethnicities were Caucasian (*n* = 109; 31.1%) and African American (*n* = 40; 11.4%). Again, for those with disabilities for who demographic data was reported, approximately 16% had emotional disabilities (*n* = 55), 12% had learning disabilities (*n* = 41), and 8.5% had intellectual disability (*n* = 30). Among the studies which provided family members' race/ethnicity information, about 16% of family members were Caucasian (*n* = 285), followed by 9.2%, Asian (*n* = 167) and 8.9%, African American (*n* = 161). Out of about 36% of special education and general education teacher respondents whose race/ethnicity information was available were Caucasian (*n* = 1,102; 22.7%), followed by Asian (*n* = 399; 8.2%) and African American and Hispanic teachers were approximately 2% of all respondents. The reason for the higher percentage of Asian families and teachers was because several studies were conducted in Asia (e.g., South Korea, China). Table 1 shows more detailed participant characteristics.

Study Characteristics

There were 23 quantitative studies and 18 qualitative studies. All the quantitative studies used some type of survey as an instrument for gathering perspectives, and twelve of them adapted the survey created and utilized by Wehmeyer, Agran, & Hughes (2000) (e.g., Carter, Lane, Pierson, & Stang, 2008; Seo, 2014) to solicit teacher perceptions of self-determination for their students with disabilities. Of the 18 qualitative studies, eight interviewed respondents (e.g., Summers et al., 2014), and four conducted focus groups (e.g., Getzel & Thoma, 2006; Leake & Boone, 2007). Two of the qualitative studies used document analysis (Nevin, Malian, & Williams, 2002; Thoma, Pannozzo, Fritton, & Bartholomew, 2008) while the other four

qualitative studies used a combination of interviews, focus groups, and observation and document reviews (e.g., Trainor, 2005). Among the studies that examined how family members or school professionals perceived self-determination of children with disabilities, intellectual disability, autism spectrum disorder, and learning disabilities were most frequently identified disability categories among children with disabilities, although 19 studies did not specify children/students' disability. Table 2 shows detailed characteristics of the included articles.

Key Themes in Perceptions about Self-determination of People with Disabilities

In this section, we report on the key themes that emerged from the meta-synthesis. As Table 2 shows, four key themes emerged: (1) the importance of self-determination instruction and skills, (2) understandings of and familiarity with self-determination, (3) opportunities for self-determination, and (4) barriers to self-determination. While these themes were identified by synthesizing across the studies, because the majority of studies only focused on one type of respondent perspective (e.g., perspective of people with disabilities or perspective of family members only), there were some differences in the degree to and ways in which the themes were addressed by all respondents. Only seven studies examined multiple stakeholders' perceptions (e.g., Eisenman, Pell, Poudel, & Pleet-Odle, 2015); and for this reason, we organized the discussion of the themes by types of respondents.

Perceptions of people with disabilities. Twelve studies were published examining the perspectives of people with disabilities; the studies were primarily published between 2004 and 2011, with an additional study in 2015. In relation to the first major theme of importance, a total of 12 qualitative and quantitative studies focused on how people with disabilities perceived the importance of self-determination in their lives, including exploring the perception held by people with disabilities of the impact of making decisions related to their daily activities, employment, and living arrangement. People with disabilities consistently identified skills associated with self-

determination as key for their success in school and post-secondary education or adult environments. They emphasized, however, the need for supports from people around them (e.g., family, peers, mentors) for their self-determination development and the critical role of opportunities for expressing self-determination (e.g., Ankeny & Lehmann, 2011). For the second theme of understanding of self-determination, people with disabilities stated that self-determination meant being in charge and advocating for themselves and others, setting and working towards goals (e.g., Nonnemacher & Bambara, 2011). Also, they identified other self-advocates and mentors as a means to learn about self-determination (Shogren & Broussard, 2011).

In terms of the third major theme, opportunities for self-determination, adults with disabilities reported feelings of frustration when they did not have opportunities and supports for learning about self-determination in school and, many adults with disabilities stated that they learned to be self-determined when they were adults through other interacting with self-advocates, training, and conferences not while they were in school (e.g., Shogren & Broussard, 2011). High school students with disabilities echoed the lack of opportunities in school, especially during transition planning (Trainor, 2007). On the other hand, when opportunities and supports were embedded throughout school activities such as instruction on self-advocacy and goal monitoring practices, people with disabilities reported that these activities were effective and that they could develop self-determination (Eisenman et al., 2015). Other practices suggested by people with disabilities to facilitate their development of self-determination included supporters in their environments enabling them to self-direct through challenges they encountered, as well as providing a variety of options and experiences to encourage choice making and decision making, and support to follow through these options and experiences (Nonnemacher & Bambara, 2011). Another practice was to listen without judgement but respond

consistently to enable people with disabilities to engage in decision making and act as their own causal agents (e.g., Karvonen, Test, Wood, Browder, & Algozzine, 2004). Additionally, people with disabilities identified strategies that they used to become causal agents including trial and error, motivation, setting goals, and working hard to reach these goals (Stoner, Angell, House, & Goins, 2006; Thoma & Getzel, 2005). For the fourth theme of barriers to self-determination, people with disabilities stated there were many barriers for them to be self-determined, listing people's low expectations and negative attitudes, over-protectiveness, and disregarding of their wishes (e.g., Shogren & Broussard, 2011; Stoner et al., 2006).

Perceptions of families. A total of 16 studies were published examining the perspectives of families; these studies were primarily published between 2002 and 2018. When families were asked about the importance of specific skills associated with self-determination or foundational skills of self-determination, which is the first theme, they placed the high value on facilitating self-determination for their child with disabilities across the life course (e.g., Haines, Summers, Palmer, Stroup-Rentier, & Chu, 2017). In terms of the second theme of understanding of self-determination, some families, including those from diverse cultural backgrounds, believed that a self-determined person is a causal agent in their life (e.g., Zhang, Landmark, Grenwelge, & Montoya, 2010) while other families from different cultural backgrounds felt unsure about the meaning of self-determination and what it would mean for their children with disabilities (e.g., Arellano & Peralta, 2013). Further, in relation to the third theme of opportunities for self-determination, families stated that they felt that fostering self-determination was part of their parental responsibilities, but families also said that they often had to use trial and error to meet to the unique needs of their child when facilitating self-determination (Summers et al., 2014). More specifically, some parents of children with significant support needs felt that their children struggled more with self-determination than children with less significant support needs. Other

parents reported not fostering certain skills associated with self-determination such as goal setting and decision making because of the age of their children, the children's disability related needs, or cultural beliefs (e.g., Zhang et al., 2010). However, across the board, family members who reported higher beliefs in the importance of self-determination tended to facilitate self-determination more frequently in the home environment (Arellano & Peralta, 2013). For example, practices that families used at home included creating opportunities for choices, teaching self-regulation strategies for inappropriate behavior, and setting up responsive and accessible environments for children to engage in self-determined actions (e.g., Zheng et al., 2015). Yet, families also reported struggling to facilitate self-determination particularly without support from professionals and other families with more experience. Lastly, for the fourth theme, families listed a number of barriers to promote self-determination, including families' schedules, limited learning opportunities in community, supports from other family members, financial resources, and family stress (Chu, 2018a, 2018b).

Perceptions of school professionals. A total of 19 studies were published examining the perspectives of school professionals. Studies of the perspectives of school professionals were the most consistent, with a study published almost every year between 1999 and 2015 although none have been published past this time. For the first theme of the importance, overall, school professionals (e.g., special education teachers, general education teachers, administrators, paraprofessionals) across grade levels and teaching assignments reported valuing self-determination and teaching skills associated with self-determination. Teachers recognized that benefits of self-determination included an increase in self-confidence, self-concept, and feelings of competence among students with disabilities (Agran et al., 1999; Karvonen et al., 2004) as well as preparing for success in school and postschool life (Wehmeyer et al., 2000). In terms of understanding and familiarity of self-determination among school professionals, they were

generally familiar with the concept of self-determination. School professionals who received information or training about self-determination were more likely to be familiar with self-determination, and also familiarity was positively correlated with how much they valued self-determination and provided instruction related to self-determination (e.g., Carter, Sisco, & Lane, 2011). For the third theme of opportunities for self-determination, teachers reported that they at least sometimes taught each of the skills associated with self-determination (e.g., Stang, Carter, Lane, & Pierson, 2009), and also administrators reported that self-determination skills were being taught within a wide range of classes and settings (Carter et al., 2015).

However, self-determination was not taught in a comprehensive manner, using an integrated approach across the life course. For example, problem solving was indicated as the skill which was most frequently across the studies (e.g., Carter et al., 2008), and in several studies, school professionals identified that they taught self-management skills and strategies often (e.g., Wehmeyer et al., 2000). Further, many school professionals identified the approach to teaching self-determination skills as informal with only limited instruction (Mason et al., 2004). In terms of the forth theme, school professionals pointed out many barriers to engaging in self-determination instruction, which included insufficient training, misunderstanding of self-determination as an outcome not as a process (e.g., Agran et al., 1999), not having authority to provide self-determination instruction, more urgent instructional needs (e.g., Wehmeyer et al., 2000), insufficient time (e.g., Cho et al., 2012), students being too young (e.g., Cho et al., 2011), and communication difficulty (e.g., Cho & Kim, 2014). School professionals also emphasized the need for more training in teaching skills associated with self-determination. Administrators considered that workshops hosted at school would be viable to provide resource and information but did not detail more systematic plans for ongoing support (Carter et al., 2015).

Perceptions of higher education faculty and students. Four studies were published examining the perspectives of higher education professionals and/or students; the studies were primarily published between 2002 and 2014. In terms of the first theme of the importance of self-determination, faculty members across different disciplines acknowledged potential benefits of self-determination for college students with and without disabilities, but beyond though not many reported being familiar with self-determination (Hong et al., 2011). While some special education doctoral students had never taken a pre-service course teaching about self-determination, others who had taken coursework were more likely to have more extensive knowledge of self-determination; those that had coursework considered self-determination an important focus of special education and planned to teach self-determination as a teacher educator (Kim et al., 2014). For the second theme of familiarity, faculty members and special education doctoral students indicated educational materials and texts as frequently sources for knowledge about self-determination (Hong et al., 2011; Kim et al., 2014). Furthermore, in terms of the link between familiarity of self-determination and providing opportunities for self-determination, Nevin et al. (2002) and Thoma et al. (2008) found pre-service teachers who received instruction on how to promote self-determination increased their knowledge of and attitudes toward instruction related to self-determination, including evidence-based practices. However, even after learning about self-determination, some pre-service teachers thought of providing opportunities for choice making only when promoting self-determination (Thoma et al., 2008). For the last theme, faculty identified several factors as barriers to integrating skills associated with self-determination in their teaching such as insufficient latitude to provide instruction in this area primarily due to course requirements (Hong et al., 2011).

Similarities and Differences in Perceptions across Respondents

Overall, youth and adults with disabilities, families of children with disabilities, school professionals, and higher education faculty and students across the studies stated that they valued the importance of self-determination. These respondents also reported familiarity with self-determination, although this ranged with the greatest familiarity reported by people with disabilities themselves, with less familiarity particularly with how to teach components of self-determination (e.g., skills associated with self-determination) by higher education faculty and students. Moreover, there was a great variability in perceptions of what opportunities for self-determination and how frequently these opportunities were provided for people with disabilities across the respondents. However, the barriers listed by the respondents generally were similar. Contextual factors seemed to play a distinguishing role in identifying both similarities and differences in people's perceptions toward self-determination of people with disabilities. There were several personal and environmental contextual factors that were repeatedly addressed across studies. The most commonly identified personal factors across studies that influenced perceptions were (a) age of people with disabilities, (b) disability label, and (c) cultural background and beliefs of people with disabilities and their families. The most commonly identified environmental factors included (a) school professional and classroom characteristics, (b) training and support to build or teach self-determination, and (c) people/societal expectations toward people with disabilities. Table 2 provides more detailed information. In the following section, we will examine the impact of each of these contextual factors on similarities and differences in perceptions across the various groups.

Personal factors. People with disabilities, family members, teachers, and faculty members commonly recognized that self-determination was important to achieve positive in-school and post-school outcomes (e.g., Hong et al., 2011; Shogren & Broussard, 2011). However, key supporters particularly identified personal factors as influential factors to

determine when self-determination should be introduced to people with disabilities and how people with disabilities should be encouraged to engage in self-determination actions.

Age of people with disabilities. The statements made across studies varied based on the age range that respondents were considering. For example, adults with disabilities reflected that skills associated with self-determination should be taught as early as possible even if children do not have disabilities (Thoma & Getzel, 2005). However, while some families and professionals also acknowledged this (e.g., Zhang et al., 2010), others tended to situate self-determination as more important for adolescents and adults suggesting differences in perceptions of age-related influences across various stakeholders.

Disability label. Although many respondents acknowledged that self-determination is important for people with disabilities regardless of the intensity of their support needs (e.g., Agran et al, 1999), disability labels appeared to shape perceptions of self-determination. For example, some family members thought that their children with more significant support needs would struggle to engage in self-determined actions (e.g., Arellano & Peralta, 2013). Also, some teachers indicated that they limited the extent and type of instruction related to self-determination based on the intensity of the student's support needs (Wehmeyer et al., 2000). These differing perceptions have implications for how instruction is delivered and environment opportunities and expectations, as discussed below.

Cultural background and beliefs. Among people with disabilities from diverse race/ethnicity groups, there were subtle differences in descriptions of self-determination (Trainor, 2005). There were also subtle differences in parent perspectives, particularly in comparative studies. For example, American parents reported that they engaged in self-determination practices at home than Taiwanese parents (Zhang et al., 2005). Also, families from diverse cultural backgrounds felt that culture influenced how they understood and facilitated self-

determination for their children with disabilities. They also felt this was not always respected by schools and other supporters (e.g., Leake & Boone, 2007). Immigrant families in Haines et al. (2017)'s study identified specific environmental barriers to fostering self-determination related to their immigration status, including stress related to finances and social isolation. They also highlighted that they did not always feel respected for their parenting style and family systems based on cultural beliefs and practices. Furthermore, family education, income levels affected how families perceived their children's foundational self-determination skills (Chu, 2018b) or what opportunities related to self-determination families provided. Nevertheless, how families provided opportunities for self-determination tended to be influenced both by expectations and experiences which were often shaped by information that was (or was not) shared by professionals (Summers et al., 2014). Because culture is influenced by multiple personal characteristics, it is an influential personal factor. And, at the same time, cultural factors also shape opportunities and experiences (i.e., environmental factors) as culture is intricately integrated in how families set up home environment and expectations for their children as well as how diverse families are perceived and supported by their communities and society.

Environmental Factors. Personal factors, such as age, disability, and culture, influence perceptions of self-determination, which also shapes environmental factors, such as school and classroom organization and instruction, the structure of systemic training and supports provided for self-determination, and broader expectations toward the abilities of people with disabilities to be self-determining.

School professional and classroom characteristics. For example, the grade and content areas of focus significant shaped expectations for and experiences with teaching self-determination. While, in general, teachers reported that they valued and frequently engaged in self-determination instruction, there were differences based on special or general education

teaching assignments. For example, even though not all the teachers were familiar with self-determination (e.g., Wehmeyer et al., 2000), and some teachers did highlight that self-determination could be taught across a range of curricular areas (e.g., Carter et al., 2008), special education teachers tended to be more familiar with self-determination and engaged in self-determination instruction than general education teachers (e.g., Seo, 2014; Grigal, Neubert, Moon, & Graham, 2003). Furthermore, secondary school teachers tended to place more importance on teaching self-determination and feel prepared for self-determination instruction than elementary school teachers (e.g., Mason et al., 2004). Also, teachers in secondary classrooms reported spending more time with self-determination instruction than elementary teachers (Stang et al., 2009), which correlates with the noted impact of age by professionals' ratings of importance. Some teachers thought their elementary students were too young to learn skills related to self-determination (e.g., Cho & Kim, 2014). These differences are likely influenced by training as well, as discussed in the next section.

According to Kim et al. (2014), while doctoral students seemed to have more extensive knowledge of self-determination definitions, assessments, and practices than special education teachers in general, the doctoral students whose interest student population was secondary students with disabilities demonstrated a higher level of familiarity. In terms of teachers' perceptions in different countries, while both general educators and special educators in the United States tended to place a higher value on promoting self-determination than educators in South Korea, there was no such discrepancy observed between Taiwanese and American teachers (Zhang et al., 2005). These differences might be partially due to how educational laws and practices have endorsed self-determination for students with disabilities in these countries (Cho & Kim, 2014).

Training and support. Access to training to build or teach self-determination skills was another strongly emphasized environmental factor. Adults with disabilities, families, school professionals, and higher education faculty and students who were familiar with the self-determination or self-determination instruction most likely had received training or information through instruction, self-advocacy activities, teacher education courses, conferences, colleagues, or materials (e.g., Lane, Carter, & Sisco, 2012; Shogren & Broussard, 2011); however, access to this varied based on a number of reasons that were not directly under the control of the respondents. Further, administrators emphasized the value of professional development, but did not emphasize ongoing supports needed for teacher to fully implement self-determination instruction. Before learning about self-determination, pre-service or in-service teachers initially thought self-determination was an outcome of instruction rather than a characteristic that developed over the life course (Agran et al., 1999; Nevin et al., 2002), and without this instruction, teachers reported that they would not have understood the concept.

Supports to facilitate self-determination which are essential environmental factors that shape the development of self-determination were perceived differently among the respondents. Despite the teachers' reports on relatively high frequency of teaching skills associated with self-determination, students and adults with disabilities did not express that they were receiving ample opportunities for self-determination in school. For example, students with disabilities exhibited knowledge about component skills of self-determination; however, a lack of guidance from teachers to connect self-awareness and self-knowledge with decision making and problem solving in order to achieve their post-secondary goals was apparent in one study (Trainor, 2007). Similarly, adults with disabilities who interacted with support staff pointed out that support staff provided few opportunities for self-determination by directing adults to follow directions without considering adults' input (Nonnemacher & Bambara, 2011). As such, supports from family,

professionals, and school administrators for instruction can facilitate as well as be a barrier when there are not systems of supports in place across these contexts (e.g., Shogren & Broussard, 2011). Nevertheless, comparing to families, teachers were not only more familiar with self-determination but also generally reported that they engaged in activities to promote self-determination more frequently than families (e.g., Zhang et al., 2002). This might be because families believed that it was schools' responsibility to teach skills associated with self-determination for their children with disabilities (e.g., Grigal et al., 2003). For example, parents in Shogren (2012)'s study believed that they created opportunities for their children at home; however, there was no transferring of skills learned at school and home because ways how self-determination was valued or facilitated were different between two settings, and there was limited, or poor communication initiated by schools.

People/societal expectations. Expectations, low or high, are another influential environmental factor. For example, people with disabilities and family members specifically often noted that low expectations for self-determination were often communicated by school systems and by their communities, and they were not given access to resources that they needed from professionals. Some professionals viewed communication skills as prerequisite to self-determination, and this can impede opportunities created for students with disabilities who have complex communication needs (e.g., Thoma et al., 2008). Moreover, families stated having partnerships with schools was critical to establish a foundation of trust and high expectations for children with disabilities and build close communication so that schools could respond to specific family and child preferences and needs into self-determination practices (Summers et al., 2014). However, families and people with disabilities rarely felt this was occurring. The need to change expectations and align instruction across home, school, and community contexts was a major issue that emerged throughout the articles.

Discussion

The purpose of this meta-synthesis was to explore how people with disabilities, families, professionals, and other stakeholders perceived self-determination of people with disabilities to inform efforts to understand, assess, and utilize discrepant perspectives when implementing and evaluating interventions to promote self-determination. Overall, the respondents across the studies generally agreed on the value of self-determination in the lives of people with disabilities. People with disabilities, in particular, expressed a belief that self-determination was vital for them to achieve their goals and dreams. However, in synthesizing across the studies, there were clear concerns expressed by people with disabilities and family members that professionals often did not make substantial efforts to reach out to share information about efforts undertaken at school to promote self-determination and learn how self-determination was perceived by students and their families and supported at home. Therefore, people with disabilities expressed their frustration with the low expectations and lack of opportunities and supports to engage in self-determined actions during their K-12 education. As the studies that examined the perspectives of people with disabilities we primarily published since the mid-2000s, the lack of change in school-based supports and services despite the introduction of the construct of self-determination to the field over twenty years ago is troubling (Caouette, Lachapelle, Moreau, & Lussier-Desrochers, 2018). Families also reported challenges with a lack of communication and respect for their culture and vision for the adult lives of their children.

Despite these concerns from people with disabilities and their families, teacher and higher education respondents, generally, reported familiarity with self-determination and reported engaging in practices to facilitate self-determination for people with disabilities. However, teachers also acknowledged that their efforts to support self-determination were not comprehensive, and there was not meaningful planning for supports across the life course and

across the K-12 curriculum. Further, there appeared to be a lack of support, administratively, in schools, for coaching and other supports beyond professional development to make self-determination instruction a reality (Hagiwara, Shogren, Lane, Raley, & Smith, in press). Given these overall findings, in the following section, we will suggest future directions for research and practice to promote self-determination for people with disabilities.

Implications for Future Research and Practice

The majority of family members and school professionals identified feeling unclear about how to support self-determination in younger children, although people with disabilities emphasized the importance of starting to learn and practice to engage in self-determined actions as early possible. This discrepancy needs to be further researched and consider in training and supports for understanding self-determination available for teachers and family members. It is widely acknowledged that it is important to build skills associated with self-determination, early on, but there are significantly fewer research studies focused on building self-determination in young children with disabilities (Erwin et al., 2009). In fact, the majority of research focuses on transition-age youth and adults (Hagiwara, Shogren, & Leko, 2017). For this reason, research should identify what activities and practices related to self-determination young children with disabilities are engaging currently at home, school, and in the community to identify areas to enhance or new intervention strategies to develop. Efforts should be taken to build supports accessible to younger children, their families, and their teachers. For example, the *Self-Determination Inventory: Student Report* (SDI:SR; Shogren & Wehmeyer, 2017b), which is a self-report self-determination assessment and currently available for students ages between 13 and 22 could be adapted for younger children under age of 13 to measure their level of self-determination and enable conversations between multiple stakeholders about levels of self-determination needed supports. This could be a starting point for family members and school

professionals to plan and implement self-determination interventions jointly across home and school and monitor and evaluate the development of self-determination over time and how it is impacted by interventions in elementary and middle school.

The majority of studies took place in the Unites States; however, a total of eight studies either focused on specific racial/ethnic groups within the U.S. or compared different cultures across the world. Because culture is one of the major contextual factors that impact opportunities and expression for self-determination (Wehmeyer et al., 2011), there is an ongoing need to ensure cultural responsivity in frameworks to assess and intervene to promote self-determination as well as research across a wider range of cultures. Furthermore, it was not clear what specific practices were used by school professionals to promote culturally sustaining self-determination interventions. Culturally sustaining practices have an "explicit goal supporting multilingualism and multiculturalism in practice and perspective for students and teachers" (Paris, 2012, p. 95). Since families from diverse cultural backgrounds were strongly concerned about gap in how self-determination was perceived and promoted between home and school, practices aiming to facilitate self-determination should be flexible to meet needs and preferences among different families (Hagiwara, Dean, & Shogren, 2019). Ongoing work is essential to capture cultural and linguistic aspects of how self-determination is perceived and expressed, and look into how self-determination practices are integrated into daily teaching and how these practices can ensure to be implemented in culturally sustaining ways that are communicated and developed through partnerships between home and school (Turnbull, Turnbull, Erwin, Soodak, & Shogren, 2015).

It was apparent that disability label impacted how parents and teachers perceived a child's level and capacity for self-determination. Personal and societal expectations for people with disabilities noticeably influenced how people perceived self-determination of people with disabilities, especially people with extensive support needs (Heller et al., 2011). This is likely

influenced by low expectations, generally, for people with cognitive disabilities and communication-related support needs. However, it is more important to, when individualizing interventions to support self-determination, to identify support needs, including support needs introduced by cognitive abilities, can build necessary supports as anyone can engage in self-determined actions, provided they have the right supports (Wehmeyer et al., 2011). Nonetheless, training and on-going support for people with disabilities, families, professionals (e.g., teachers, support providers), and people in community will be crucial to change overall societal expectations that people with disabilities, even people with extensive support needs can be self-determining (Erwin et al., 2009; Hagiwara et al, 2019). Further, there is a critical need to promote access to strategies and supports that operationalize how to provide the supports necessary for people with intellectual and development disabilities, including those with complex communication needs to be self-determining (Shogren et al, 2018). Future research should explore what training and support would be appropriate and sustainable in different contexts (e.g., home, school, community) to educate people about self-determination and create and communicate opportunities for self-determination across contexts.

Furthermore, because of the lack of comprehensive training and support across the life course, very few respondents were familiar with theoretical and developmental aspects of self-determination. Consequently, it is time to investigate how current pre-service general and special education teachers are taught about self-determination as a curricular area for student with and without disabilities across grade levels not only in the context of transition planning but also academic learning (Hagiwara et al, 2017). Because researchers have explored ways to implement interventions and supports to promote self-determination within Tier 1 of a multi-tier model (Shogren, Wehmeyer, & Lane, 2016), and established the impact of teaching self-determination skills in inclusive general education classrooms, pre-service teachers should be prepared to

integrate evidence-based practices to facilitate self-determination into their daily teaching such as the *Self-Determined Learning Model of Instruction* (SDLMI; Shogren, Raley, Burke, & Wehmeyer, 2018) for all students, including those with disabilities.

Limitations

There are several limitations that must be acknowledged to interpret the results of this meta-synthesis. First, because the meta-synthesis included studies which varied in methodological approaches and analysis, there was no standard framework for synthesizing the themes (Corcoran, Berry, & Hill, 2015). We used a standard coding protocol and established IRR to attempt to ensuring consistency in study coding, and used an iterative process in the identification of themes. Additionally, there were differences in the studies that influenced interpretations. For example, all the studies which examined perceptions of people with disabilities toward their own self-determination utilized qualitative research methods with more open-ended questions. However, except for the study by Leake and Boone (2007), the studies examined school professionals' perceptions about self-determination all employed quantitative research methods with pre-determined sets of survey questions. Thus, synthesizing across these respondent groups is limited.

Second, some studies clearly identified and examined the impact of the contextual factors on people's perceptions toward self-determination of people with disabilities while others were more exploratory or the factors examined not specifically named. Additionally, there was a lack of examination of the interaction of contextual factors. Consequently, in the process of synthesizing the included studies, there might be discrepancies in how the included studies regarded the contextual factors and how we interpreted them. A third limitation was that some studies did not specify respondents' demographic information such as gender, race/ethnicity, and disability labels or, in the case of school professionals, teaching assignments or roles. This limits

the degree to which comparisons based on personal factors or environmental factors can be undertaken. Ongoing attention is needed to clearly indicate study respondents' demographic information as well as professionals' roles (e.g., teacher and classroom characteristics) as well as to more explicitly discuss contextual factors that are examined or potentially influence findings.

Conclusion

The perspectives expressed across the studies included in this meta-synthesis suggest that all stakeholders believe opportunities and supports should be available for people with disabilities to engage in self-determined actions across settings and across the life course because of the impact of causal agency on the lives and outcomes of people with disabilities. However, systemic barriers continue to exist that limit opportunities and supports. Continuing to listen to people with disabilities to inform efforts to improve the quality of opportunities and supports available is imperative. Further, the literature suggests that families, school professionals, and other supporters need access to resources and supports to address existing environmental barriers, including access to evidence-based practices to promote skills associated with self-determination across the life course. Importantly, these supporters need resources to be able to take contextual factors into consideration when planning for the supports needed to enable people with disabilities to develop self-determination, across the life course that are respectful of the vision of people with disabilities and cultural/family values.

References

*Indicated studies included in the review.

*Agran, M., Snow, K., & Swaner, J. (1999). Teacher perceptions of self-determination: Benefits, characteristics, strategies. *Education and Training in Mental Retardation and Developmental Disabilities, 34*, 293-301.

*Ankeny, E. M., & Lehmann, J. P. (2011). Journey toward self-determination: Voices of students with disabilities who participated in a secondary transition program on a community college campus. *Remedial and Special Education, 32*, 279-289. doi:10.1177/0741932510362215

*Arellano, A., & Peralta, F. (2013). Self-determination of young children with intellectual disability: Understanding parents' perspectives. *British Journal of Special Education, 40*, 175-181. doi:10.1111/1467-8578.12037

Brown, J. C. (2017). A metasynthesis of the complementarity of culturally responsive and inquiry-based science education in K-12 settings: Implications for advancing equitable science teaching and learning. *Journal of Research in Science Teaching, 54*, 1143-1173. doi:10.1002/tea.21401

Brotherson, M. J., Cook, C. C., Erwin, E. J., & Weigel, C. J. (2008). Understanding self-determination and families of young children with disabilities in home environments. *Journal of Early Intervention, 31*, 22-43. doi:10.1177/1053815108324445

Caouette, M., Lachapelle, Y., Moreau, J., & Lussier-Desrochers, D. (2018). Descriptive study of caseworkers' practices to support the development of self-determination of adults with intellectual disabilities. *Journal of Policy and Practice in Intellectual Disabilities, 15*, 4-11. doi:10.1111/jppi.12217

*Carter, E. W., Lane, K. L., Cooney, M., Weir, K., Moss, C. K., & Machalicek, W. (2013). Self-determination among transition-age youth with autism or intellectual disability: Parent perspectives. *Research and Practice for Persons with Severe Disabilities, 38*, 129-138. doi:10.1177/154079691303800301

*Carter, E. W., Lane, K. L., Jenkins, A. B., Magill, L., Germer, K., & Greiner, S. M. (2015). Administrator views on providing self-determination instruction in elementary and secondary schools. *Journal of Special Education, 49*, 52-64. doi:10.1177/0022466913502865

*Carter, E. W., Lane, K. L., Pierson, M. R., & Stang, K. K. (2008). Promoting self-determination for transition-age youth: Views of high school general and special educators. *Exceptional Children, 75*, 55-70. doi:10.1177/001440290807500103

*Carter, E. W., Sisco, L. G., & Lane, K. L. (2011). Paraprofessional perspectives on promoting self-determination among elementary and secondary students with severe disabilities. *Research and Practice for Persons with Severe Disabilities, 36*, 1-10. doi:10.2511/rpsd.36.1-2.1

Carter, E. W., Trainor, A., Owens, L., Sweden, B., & Sun, Y. (2010). Self-determination prospects of youth with high-incidence disabilities: Divergent perspectives and related factors. *Journal of Emotional and Behavioral Disorders, 18*, 67-81. doi:10.1177/1063426609332605

*Cho, H.-J., & Kim, K.-H. (2014). A comparison of Korean and American elementary educators' self-determination practices. *Asia Pacific Education Review, 15*, 155-164. doi:10.1007/s12564-014-9315-z

*Cho, H.-J., Wehmeyer, M. L., & Kingston, N. M. (2012). The effect of social and classroom ecological factors on promoting self-determination in elementary school. *Preventing*

School Failure: Alternative Education for Children and Youth, 56, 19-28. doi:10.1080/1045988X.2010.548419

*Cho, H.-J., Wehmeyer, M., & Kingston, N. (2011). Elementary teachers' knowledge and use of interventions and barriers to promoting student self-determination. *Journal of Special Education, 45*, 149-156. doi:10.1177/0022466910362588

*Cho, H.-J., Wehmeyer, M., & Kingston, N. (2013). Factors that predict elementary educators' perceptions and practice in teaching self-determination. *Psychology in the Schools, 50*, 770-780. doi:10.1002/pits.21707

*Chu, S.-Y. (2018a). Family voices: Promoting foundation skills of self-determination for young children with disabilities in Taiwan. *Asia Pacific Education Review, 19*, 91–101. doi:10.1007/s12564-018-9519-8

*Chu, S.-Y. (2018b). Perspectives of Taiwanese families: A preliminary study on promoting self-determination skills of young children with disabilities. *Early Childhood Education Journal, 46*, 673-681. doi:10.1007/s10643-018-0909-7

Corcoran, J., Berry, A., & Hill, S. (2015). The lived experience of US parents of children with autism spectrum disorders: A systematic review and meta-synthesis. *Journal of Intellectual Disabilities, 19*, 356-366. doi:10.1177/1744629515577876

*Eisenman, L. T., Pell, M. M., Poudel, B. B., & Pleet-Odle, A. M. (2015). "I think I'm reaching my potential": Students' self-determination experiences in an inclusive high school. *Career Development and Transition for Exceptional Individuals, 38*, 101-112. doi:10.1177/2165143414537349

Erwin, E. J., Brotherson, M. J., Palmer, S. B., Cook, C. C., Weigel, C. J., & Summers, J.A. (2009). How to promote self-determination for young children with disabilities:

Evidence-based strategies for early childhood practitioners and families. *Young Exceptional Children, 12,* 27-37.

*Getzel, E. E., & Thoma, C. A. (2006). Voice of experience: What college students with learning disabilities and attention deficit/hyperactivity disorders tell us are important self-determination skills for success. *Learning Disabilities: A Multidisciplinary Journal, 14*, 33-40.

*Grigal, M., Neubert, D. A., Moon, M. S., & Graham, S. (2003). Self-determination for students with disabilities: Views of parents and teachers. *Exceptional Children, 70*, 97-112. doi:10.1177%2F001440290307000106

*Haines, S. J., Summers, J. A., Palmer, S. B., Stroup-Rentier, V. L., & Chu, S.-Y. (2017). Immigrant families' perceptions of fostering their preschoolers' foundational skills for self-determination. *Inclusion, 5*, 293-305. doi:10.1352/2326-6988-5.4.293

Hagiwara, M., Dean, E. E., & Shogren, K. A. (2019). The Self-Determined Career Design Model: Supporting Young People with Developmental Disabilities and Their Families in Home and Community Settings. In K. Scorgie & C. Forlin. (Eds.), *Promoting social inclusion: Co-creating environments that foster equity and belonging* (pp. 201-220). Bingley, United Kingdom: Emerald Publishing Limited.

Hagiwara, M., Shogren, K. A., Lane, K. L., Raley, S. K., & Smith, S. A. (in press). Development of the Self-Determined Learning Model of Instruction coaching model: Implications for research and practice. *Education and Training in Autism and Developmental Disabilities.*

Hagiwara, M., Shogren, K., & Leko, M. (2017). Reviewing research on the Self-Determined Learning Model of Instruction: Mapping the terrain and charting a course to promote adoption and use. *Advances in Neurodevelopmental Disorders*, *1*, 3-13. doi:10.1007/s41252-017-0007-7

Heller, T., Schindler, A., Palmer, S., Wehmeyer, M., Parent, W., Jenson, R., . . . O'Hara, D. (2011). Self-Determination across the Life Span: Issues and Gaps. *A Special Education Journal, 19*, 31-45. doi:10.1080/09362835.2011.537228

*Hong, B., Haefner, L., & Slekar, T. (2011). Faculty attitudes and knowledge toward promoting self-determination and self-directed learning for college students with and without disabilities. *International Journal of Teaching and Learning in Higher Education, 23*, 175-185.

*Karvonen, M., Test, D. W., Wood, W. M., Browder, D., & Algozzine, B. (2004). Putting self-determination into practice. *Exceptional Children, 71*, 23-41.

*Kim, K.-H., Morningstar, M. E., & Jung, S. (2014). Preliminary study: Special education doctoral students' perceptions of self-determination. *International Journal of Disability, Development and Education, 61*, 388-402. doi:10.1080/1034912X.2014.955787

*Lane, K. L., Carter, E. W., & Sisco, L. (2012). Paraprofessional involvement in self-determination instruction for students with high-incidence disabilities. *Exceptional Children, 78*, 237-251. doi:10.1177/001440291207800206

Lachapelle, Y., Wehmeyer, M. L., Haelewyck, M.-C., Courbois, Y., Keith, K. D., Schalock, R., . . . Walsh, P. N. (2005). The relationship between quality of life and self-determination: an international study. *Journal of Intellectual Disability Research, 49*, 740-744. doi:10.1111/j.1365-2788.2005.00743.x

*Leake, D., & Boone, R. (2007). Multicultural perspectives on self-determination from youth, parent, and teacher focus groups. *Career Development for Exceptional Individuals, 30*, 104-115. doi:10.1177/08857288070300020101

*Mason, C., Field, S., & Sawilowsky, S. (2004). Implementation of self-determination activities and student participation in IEPs. *Exceptional Children, 70*, 441-451. doi:10.1177/001440290407000404

*Nevin, A., Malian, I., & Williams, L. (2002). Perspectives on self-determination across the curriculum: Report of a preservice special education teacher preparation program. *Remedial and Special Education, 23*, 75-81. doi:10.1177/074193250202300203

*Nonnemacher, S. L., & Bambara, L. M. (2011). "I'm supposed to be in charge": Self-advocates' perspectives on their self-determination support needs. *Intellectual and Developmental Disabilities, 49*, 327-340. doi:10.1352/1934-9556-49.5.327

Paris, D. (2012). Culturally sustaining pedagogy: A needed change in stance, terminology, and practice. *Educational Researcher, 41*, 93-97.

*Seo, H. (2014). Promoting the self-determination of elementary and secondary students with disabilities: perspectives of general and special educators in Korea. *Education and Training in Autism and Developmental Disabilities, 49*, 277-289.

*Shogren, K. (2012). Hispanic mothers' perceptions of self-determination. *Research and Practice for Persons with Severe Disabilities, 37*, 170-184. doi:10.2511/027494812804153561

Shogren, K. A., Burke, K. M., Anderson, M. H., Antosh, A. A., Wehmeyer, M. L., LaPlante, T., & Shaw, L. A. (2018). Evaluating the differential impact of interventions to promote self-determination and goal attainment for transition-age youth with intellectual disability. *Research and Practice for Persons with Severe Disabilities, 43*, 165-180. doi:10.1177/1540796918779775

*Shogren, K. A., & Broussard, R. (2011). Exploring the perceptions of self-determination of individuals with intellectual disability. *Intellectual and Developmental Disabilities, 49*, 86-102. doi:10.1352/1934-9556-49.2.86

Shogren, K. A., Luckasson, R., & Schalock, R. L. (2014). The definition of "context" and its application in the field of intellectual disability. *Journal of Policy and Practice in Intellectual Disabilities, 11*, 109-116. doi:10.1111/jppi.12077

Shogren, K. A., Raley, S. K., Burke, K. M., & Wehmeyer, M. L. (2018). *The Self-Determined Learning Model of Instruction Teacher's Guide*. Lawrence, KS: Kansas University Center on Developmental Disabilities.

Shogren, K. A., Shaw, L. A., Raley, S. K., & Wehmeyer, M. L. (2018a). Exploring the effect of disability, race-ethnicity, and socioeconomic status on scores on the Self-Determination Inventory: Student Report. *Exceptional Children*, *85*, 10-27. doi:0014402918782150

Shogren, K. A., Shaw, L. A., Raley, S. K., & Wehmeyer, M. L. (2018b). The impact of personal characteristics on scores on the Self-Determination Inventory: Student Report in adolescents with and without disabilities. *Psychology in the Schools*, *55*, 1013-1026. doi:10.1002/pits.22174

Shogren, K. A. & Wehmeyer, M. L. (2017a). Culture and self-determination. In M. L. Wehmeyer, K. A. Shogren, Little, T. D., & Lopez, S. J. (Eds.), *Development of self-determination through the life-course* (pp. 159-168). Dordrecht, The Netherlands: Springer. doi:10.1007/978-94-024-1042-6_12

Shogren, K. A., & Wehmeyer, M. L. (2017b). *Self-Determination Inventory: Student Report*. Lawrence, KS: Kansas University Center on Developmental Disabilities.

Shogren, K. A., Wehmeyer, M. L., & Lane, K. L. (2016). Embedding interventions to promote self-determination within multitiered systems of supports. *Exceptionality, 24*, 213-224.

Shogren, K. A., Wehmeyer, M. L., Palmer, S. B., Forber-Pratt, A. J., Little, T. J., & Lopez, S. (2015). Causal agency theory: Reconceptualizing a functional model of self-determination. *Education and Training in Autism and Developmental Disabilities, 50*, 251-263.

Shogren, K. A., Wehmeyer, M. L., Palmer, S. B., Rifenbark, G. G., & Little, T. D. (2015). Relationships between self-determination and postschool outcomes for youth with disabilities. *Journal of Special Education, 48*, 256-267. doi:10.1177/0022466913489733

*Stang, K. K., Carter, E. W., Lane, K. L., & Pierson, M. R. (2009). Perspectives of general and special educators on fostering self-determination in elementary and middle schools. *Journal of Special Education, 43*, 94-106. doi:10.1177/0022466907313452

*Stoner, J. B., Angell, M. E., House, J. J., & Goins, K. (2006). Self-determination: Hearing the voices of adults with physical disabilities. *Physical disabilities: Education and related services, 25*, 3-35.

*Summers, J. A., Brotherson, M. J., Erwin, E. J., Maude, S. P., Palmer, S. B., Haines, S. J., . . . Zheng, Y. Z. (2014). Family reflections on the foundations of self-determination in early childhood. *Inclusion, 2*, 175-194. doi:10.1352/2326-6988-2.03.175

*Thoma, C. A., & Getzel, E. E. (2005). Self-determination is what it's all about: What post-secondary students with disabilities tell us are important considerations for success. *Education and Training in Developmental Disabilities, 40*, 234-242.

*Thoma, C. A., Pannozzo, G. M., Fritton, S. C., & Bartholomew, C. C. (2008). A qualitative study of preservice teachers' understanding of self-determination for students with significant disabilities. *Career Development for Exceptional Individuals, 31*, 94-105. doi:10.1177/0885728808317444

Timulak, L. (2014). Qualitative meta-analysis. In U. Flick (Ed.), *SAGE handbook of qualitative data analysis* (pp. 481–496). Thousand Oaks, CA: SAGEPublications.

*Trainor, A. A. (2005). Self-determination perceptions and behaviors of diverse students with LD during the transition planning process. *Journal of Learning Disabilities, 38*, 233-249. doi:10.1177/00222194050380030501

*Trainor, A. A. (2007). Perceptions of adolescent girls with LD regarding self-determination and postsecondary transition planning. *Learning Disability Quarterly, 30*, 31–45. doi.org/10.2307/30035514

Trainor, A. A., Lindstrom, L., Simon-Burroughs, M., Martin, J. E., & Sorrells, A. M. (2008). From marginalized to maximized opportunities for diverse youths with disabilities: A position paper of the Division on Career Development and Transition. *Career Development for Exceptional Individuals, 31*, 56-64. doi:10.1177/0885728807313777

Turnbull, A. P., Turnbull, H. R., Erwin, E. E., Soodak, L. C., & Shogren, K. A. (2015). *Families, professionals, and exceptionality: Positive outcomes through partnership and trust* (7th ed.). Upper Saddle River, NJ: Merrill Prentice Hall.

Wehmeyer, M. L. (2014). Self-determination: A family affair. *Family Relations, 63*, 178-184. doi:10.1111/fare.12052

Wehmeyer, M. L., Abery, B. H., Zhang, D., Ward, K., Willis, D., Hossain, W. A., . . . Calkins, C. (2011). Personal self-determination and moderating variables that impact efforts to promote self-determination. *Exceptionality, 19*, 19-30. doi:10.1080/09362835.2011.537225

*Wehmeyer, M. L., Agran, M., & Hughes, C. (2000). A national survey of teachers' promotion of self-determination and student-directed learning. *Journal of Special Education, 34*, 58-68.

Wehmeyer, M. L., & Garner, N. W. (2003). The impact of personal characteristics of people with intellectual and developmental disability on self-determination and autonomous functioning. *Journal of Applied Research in Intellectual Disabilities, 16*, 255-265. doi:10.1046/j.1468-3148.2003.00161.x

Wehmeyer, M. L., Shogren, K. A., Little, T. D., & Lopez, S. J., (Eds.). (2017). *Handbook on the development of self-determination*. New York, NY: Springer.

*Zhang, D. (2005). Parent practices in facilitating self-determination skills: The influences of culture, socioeconomic status, and children's special education status. *Research and Practice for Persons with Severe Disabilities, 30*, 154-162. doi:10.2511%2Frpsd.30.3.154

*Zhang, D., Katsiyannis, A., & Zhang, J. (2002). Teacher and parent practice on fostering self-determination of high school students with mild disabilities. *Career Development for Exceptional Individuals, 25*, 157-169. doi:10.1177/088572880202500205

*Zhang, D., Landmark, L., Grenwelge, C., & Montoya, L. (2010). Culturally diverse parents' perspectives on self-determination. *Education and Training in Autism and Developmental Disabilities, 45*, 175-186.

*Zhang, D., Wehmeyer, M. L., & Chen, L. J. (2005). Parent and teacher engagement in fostering the self-determination of students with disabilities: A comparison between the United States and the Republic of China. *Remedial and Special Education, 26*, 55-64. doi:10.1177/07419325050260010701

*Zheng, Y., Maude, S. P., Brotherson, M. J., Summers, J. A., Palmer, S. B., & Erwin, E. J. (2015). Foundations for self-determination perceived and promoted by families of young children with disabilities in China. *Education and Training in Autism and Developmental Disabilities, 50*, 109-122.

Table 1

Respondent Characteristics (N = 9,268)*

	n	%
People with Disabilities	351	3.8
Gender		
Female	97	27.6
Male	107	30.5
Not specified	147	41.9
Age/Grade level		
High school	93	26.5
Adulthood (ages 18-56)	111	31.6
Not specified	147	41.9
Race/Ethnicity		
Caucasian	109	31.1
African American	40	11.4
Hispanic	12	3.4
Asian	19	5.4
Other (e.g., Native American, Hawaiian Pacific Islander)	12	3.4
Not specified	159	45.3
Disability Labels of Respondents with Disabilities		
Intellectual disability	30	8.5
Learning disabilities	41	11.7
Emotional disturbance	55	15.7
Orthopedic impairment	21	6.0
Vision impairment	3	0.9
ADHD	10	2.8
Other (e.g., medical conditions, mental health)	10	2.8
Not specified	181	51.6
Family Members	1,807	19.5
Race/Ethnicity of family members		
Caucasian	285	15.8
African American	161	8.9
Hispanic	46	2.5
Asian	167	9.2
Multiple	3	0.2
Other	33	1.8
Not specified	1,112	61.5
Special Education Teachers	3,185	34.4
General Education Teachers	1,677	18.1
Race/Ethnicity of teachers (e.g., special education, general education)		
Caucasian	1,102	22.7
African American	101	2.1
Hispanic	101	2.1
Asian	399	8.2
Multiple	5	0.1

Other (e.g., Native American, Hawaiian Pacific Islander)	58	1.2
Not specified	3,096	63.7
Paraprofessionals	570	6.2
Administrators	388	4.2
Related Service Providers (e.g., guidance counselor)	49	0.5
Other not specified school-related professionals	444	4.8
Higher Education		
Faculty or doctoral students	336	3.6
Pre-service teachers	79	0.9
Not specified	382	4.1

Note. Some percentages do not add up to 100% due to rounding. *Some studies might have used the same sample.

Table 2

Study Characteristics (N = 41)

	n	%
Key Themes Identified in the Study		
Familiarity with and training of self-determination	13	31.7
Importance of self-determination instruction and skills	18	43.9
Opportunities for self-determination	23	56.1
Barriers to self-determination	13	31.7
Type of Respondents		
Only people with disabilities	8	19.5
Only family members	10	24.4
Only school professionals	12	29.3
Only higher education faculty or doctoral students	2	4.9
Only pre-service teachers	2	4.9
Family members and school professionals	3	7.3
People with disabilities, families, and school professionals	3	7.3
Personal Factors Identified in the Study		
Age of people with disabilities	24	59
Disability label	24	59
Cultural background and beliefs of people with disabilities	11	27
Environmental Factors Identified in the Study		
School professional and classroom characteristics	15	37
Training and support	12	29
People/societal expectations	7	17
Countries Focused on In Studies		
United States	34	82.9
South Korea	1	2.4
China & Taiwan	3	7.3
Spain	1	2.4
Cross countries (e.g., South Korea and the U.S.)	2	4.9

Note. The total numbers of key themes, personal and environmental factors, and disability labels exceed the actual number of studies because several studies included more than one theme, factors, or disability labels. Therefore, percentages do not add up to 100%.

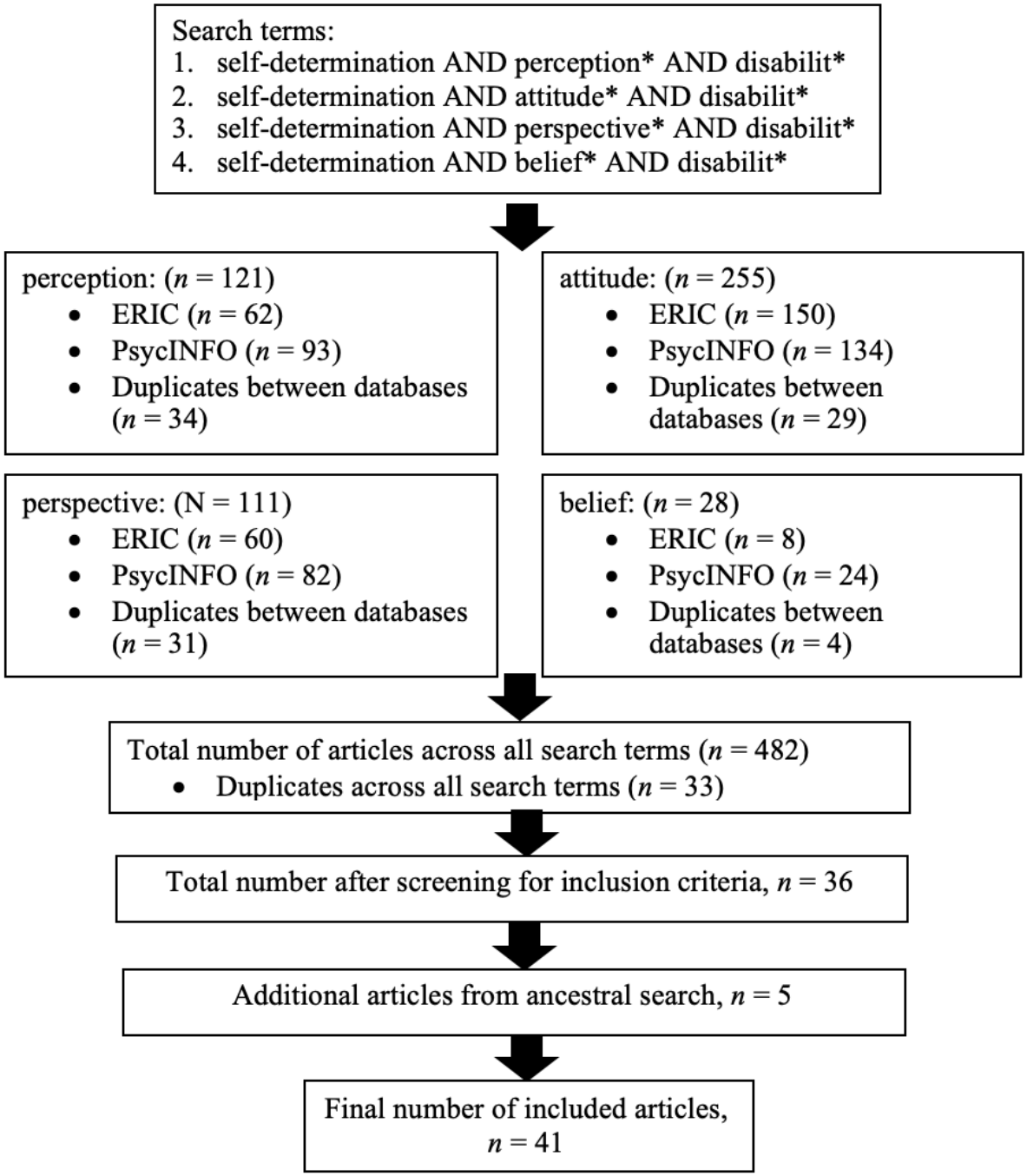

Figure 1. Search procedure for all the search terms.

Chapter 3: Examining the Impact of Personal Factors on Scores on the Self-Determination Inventory: Adult Report in Adults with Disabilities

Self-determination develops across the life course and plays an important role in the lives of people with disabilities throughout childhood and adolescence and into adulthood (Brotherson, Cook, Erwin, & Weigel, 2008). For this reason, it is crucial that people with disabilities to have opportunities to learn, practice, and receive needed supports to capitalize upon opportunities to develop self-determination and causal agency over the life course. Causal Agency Theory (Shogren, Wehmeyer, Palmer, Forber-Pratt, et al., 2015) was recently introduced to describe the development of self-determination across the life course and defines self-determination as a

> dispositional characteristic manifested as acting as the causal agent in one's life. Self-determined people (i.e., causal agents) act in service to freely chosen goals. Self-determined actions function to enable a person to be the causal agent is his or her life (p. 258).

Causal Agency Theory describes three essential characteristics of self-determined action: (a) *volitional action*, (b) *agentic action*, and (c) *action-control beliefs*. Acting volitionally involves making conscious choices based on preferences and self-initiating actions in an autonomous manner. People who exercise agentic action self-direct and self-regulate, identifying pathways that can lead to a specific outcome and acting with behavioral flexibility as they navigate barriers they encounter. Self-determined people also demonstrate action-control beliefs, which involve control expectancies, empowerment, and realization of one's abilities to exert an influence over environments through goal-directed actions (Shogren, Wehmeyer, Palmer, Forber-Pratt, et al., 2015).

During childhood, the early development of foundational skills associated with self-

determination plays an essential role in enabling volitional and agentic action and action control beliefs as children age (Palmer, Wehmeyer, & Shogren, 2017). During adolescence, self-determination continues to develop as youth learn, enhance, and practice knowledge, skills, beliefs, and actions that enable them to navigate opportunities, experiences, and barriers that they encounter in their environment (Wehmeyer & Shogren, 2017). For adults, especially adults with disabilities, the role of supports and opportunities becomes critical to enable the sustained use of self-determined actions learned during adolescence. However, adults with disabilities, particularly adults with intellectual and developmental disabilities, often face significant environmental barriers to the expression of self-determination (Shogren & Broussard, 2011) especially when they are not afforded the same opportunities for adult roles and responsibilities including community living, ongoing education and employment (Lipscomb et al., 2017).

The barriers encountered by adults with disabilities highlight the importance of research on self-determination across the life course, particularly as higher levels of self-determination in adults with intellectual and developmental disabilities are associated with living and working in the community (Wehmeyer & Garner, 2003) and greater employment and community access (Shogren, Wehmeyer, Palmer, Rifenbark, & Little, 2015). This suggests that not only is self-determination an important outcome in and of itself, but that it also impacts the attainment of other valued outcomes in adulthood. Researchers also have found that, in adulthood, interventions can be implemented to enhance self-determination to promote more positive work and living outcomes (Dean, Shogren, Wehmeyer, Almire, & Mellenbruch, 2019; Shogren et al., 2016). As such, self-determination and the abilities associated with goal directed actions can be promoted in adulthood with effective supports and by creating inclusive opportunities in postsecondary education, employment, and living. Moreover, researchers have found associations between higher quality of life and enhanced self-determination in adulthood

(Lachapelle et al., 2005). Therefore, opportunities and supports to engage in self-determined actions need to be available across the life course and across contexts (Walker et al., 2011).

Assessments of Self-Determination

As a dispositional characteristic, self-determination is assumed to be an enduring characteristic which can be meaningfully assessed, and changes detected over time with development and as contextual factors vary (Shogren & Wehmeyer, 2017b). Recently, a new self-determination measure, the *Self-Determination Inventory: Student Report* (SDI:SR; Shogren & Wehmeyer, 2017c) was developed to align with Causal Agency Theory and to meet the increased need for self-determination assessments available online with comprehensive accessibility and reporting features to promote access and engagement by people with and without disabilities and those that support them in inclusive settings (Shogren, Shaw, Raley, & Wehmeyer, 2018). The SDI:SR is a self-report measure and was validated for adolescents ages 13 to 22. It includes 21 items asking young people questions about how they feel about their ability to make choices, decision, and set and attain goals. However, the need to measure self-determination does not end after young people enter adulthood. As noted previously, particularly for adults with intellectual and developmental disabilities, there is an ongoing need to understand self-determination to guide intervention and to target changes in environmental opportunities for the expression of self-determination (Abery & Stancliffe, 2003). As such, there was a need to extend the SDI:SR framework into adulthood. The *Self-Determination Inventory: Adult Report* (SDI:AR) was developed to specifically target the adult population, and initial psychometrics suggest the reliability of items and validity of the scale in adults with intellectual and developmental disabilities ages 18 and over (Shogren, Hagiwara, & Rifenbark, 2019).

After extensive review and consultation with stakeholders on the 21 items on the SDI:SR, the decision was made to utilize the same items on the SDI:AR as on the SDI:SR as they are

context-neutral and have applicability across adolescence and adulthood (Shogren et al., 2019); thus, the SDI:AR aligns with the SDI:SR and Causal Agency Theory. The same online platform was also adopted, although certain features including instructions and embedded demographic items were updated for adult roles and responsibilities. It was hypothesized that using the same set of items could enable meaningful comparison of self-determination throughout adolescence and into adulthood. While the initial psychometrics of the SDI:AR have been explored for adults with and without intellectual and developmental disabilities, there has not yet been an examination of the impact of personal factors on the responses of adults with and without disabilities on the SDI:AR, and that is the purpose of this study. Prior to describing the methodology, we will review the reasons why examining personal factors that potentially impact self-determination in adulthood is a critical area of need.

Personal Factors that Impact Expression of Self-Determination

Researchers have consistently found that personal factors, including age, gender, race/ethnicity, and disability status may impact how each person expresses self-determination (Hagiwara, Shogren, & Lockman Turner, 2019). Age has a significant impact on self-determination (Shogren et al., 2018) given the expectation of individual growth and development; therefore, it is expected to see self-determination levels change over the life course (Wehmeyer, Shogren, Little, & Lopez, 2017). Less research, however, has examined changes post adolescence into early adulthood (22 to 40 years), middle adulthood (41 to 65 years), and late adulthood (greater than 65; Lerner et al., 2003).

Other factors may also impact on the expression of self-determination in adults with disabilities. For example, research with adolescents has suggested there may be variability in the development and expression of self-determined actions among people with different disability labels. Chou, Wehmeyer, Palmer, and Lee (2007) reported that adolescents with learning

disabilities reported higher self-determination scores than those with autism spectrum disorder and intellectual disability. Shogren et al. (2018) found similar patterns related to disability label (e.g., those with intellectual disability and autism spectrum disorder scoring lower) in adolescents but also found that there was an interaction of disability label with race/ethnicity and socioeconomic status. Gender, however, did not have a significant impact on scores, although other researchers have found gender effects in adolescents (e.g., Nota, Ferrari, Soresi, & Wehmeyer, 2007; Shogren et al., 2007). However, most of the existing research on the impact of personal factors on self-determination focuses on adolescents or transition-age young adults but does not examine self-determination throughout adulthood. Therefore, research is needed on the impact of personal factors in adulthood, as well as the interaction of these factors across the stages of adulthood (Wehmeyer & Abery, 2013).

Purpose of the Present Study Examining the Impact of Personal Factors on the SDI:AR

To date, there has been no comprehensive study examining the impact of personal factors on self-reported self-determination of adults with disabilities on the SDI:AR, nor examination of the potential impact of personal factors on specific items linked to each of the essential characteristics defined by Causal Agency Theory (i.e., volitional action, agentic action, and action-control beliefs). Such work, however, is critically needed for several reasons. First the SDI:AR has been recently developed and introduced to the field to align with Causal Agency Theory necessitating examination of the reliability of the items and the validity of the overall scale in detecting expected differences based on personal factors. Second, examining factors that impact responses on the SDI:AR will allow for future examination of similarities and differences in how personal factors impact self-determination across adolescents and adults with and without disabilities. Third, research on the impact of personal factors on responses on the SDI:AR will provide critically needed information on the expression of self-determination throughout

adulthood, informing intervention development and personalization throughout the life course.

Therefore, the purpose of this study was to analyze data from the SDI:AR validation study to examine the impact of personal factors (age, gender, and disability label) on the expression of self-determination in adults with and without disabilities. Specific research questions were as follows.

1. In the adult population, how variable is overall self-determination and do responses vary across SDI:AR items?
2. What is the impact of age on overall self-determination and item responses?
3. What is the impact of gender on overall self-determination and item responses?
4. What is the impact of disability label on overall self-determination and item responses?

Method

Measure

Self-Determination Inventory: Adult Report. As mentioned above, the SDI:AR is a self-report measure of self-determination for adults with and without disabilities ages 18 and over. It was developed to align with Causal Agency Theory and the SDI:SR, which includes 21 items that assess overall self-determination and its three essential characteristics. The SDI:AR is administered online. It is written at approximately a third-grade reading level and offers embedded accessibility features, including in-text definitions for challenging words and audio playback to support people who prefer to have items read aloud. The online platform allows survey takers to indicate their answers on a slider scale that is scored by computer software between 0 to 99. This response method reduces discrimination errors and allows the data to be treated as continuous (Ahearn, 1997; Rausch & Zehetleitner, 2014). At the end of the survey, a summary report is generated to provide immediate feedback to the survey taker on their self-determination profile, which includes an overall self-determination score and scores for each

essential characteristic of self-determination (e.g., volitional action, agentic action, action-control beliefs). The SDI:AR also captures standardized demographic information with items that were customized for the SDI:AR. For example, the SDI:SR includes disability status questions based on IDEA disability eligibility classifications. However, the adult version utilizes terms used in the adult service field. More specifically, emotional or behavioral disability, other health impairment, and multiple disabilities have been removed from the adult version as these are primary used in school-based contexts during adolescence, and instead mental health disability was added. Additionally, "retired" was added to the work status question on the SDI:AR as this may characterize the experiences of adults during certain life stages.

Sample

After receiving Institutional Review Board approval, a sample of adults was recruited to validate the SDI:AR. Recruitment strategies included (a) soliciting participation from postsecondary education institutions, disability-related agencies, and self-advocacy groups in rural, suburban and urban areas across the United States, and (b) sharing recruitment materials through local, state, and national organizations' email listservs and social media accounts. Every respondent was offered a $5 gift card for their time and participation. The focus was on generating a sample that would be representative of adults with varying disability labels (e.g., intellectual disability, autism spectrum disorder, physical disability, mental health disability) ages 18 and over. If a person with disabilities had a guardian, permission to take the survey was solicited through the online system from the guardian prior to the person with a disability completing the SDI:AR. As such, the focus of the validation study was adults with disabilities, and we specifically sought samples of varying disability labels to allow for subgroup analyses based on disability. However, because the SDI:AR is available online to anyone and it is stated that it can be completed by adults with and without disabilities, a large sample of adults who did

not identify as having a disability completed the survey as well. Many of these individuals were supporters (e.g., family members, professionals) of the adults with disabilities that were part of the sample. Given this data, we chose to utilize a no disability group in the analyses, however as further described in the Limitations, we should note that we did not systematically recruit this group which introduces limitations in generalizability to those without disabilities necessitating future work in this area.

The validation sample that provided the data for the present analyses included 524 adults with and without disabilities ages 18 through 71. The most commonly endorsed disability was no disability (n = 118; 21.8%), followed by a group of respondents with intellectual disability (n = 116; 21.4%). There were slightly more female respondents (n = 277; 51.2%) than males (n = 247; 45.7%), as well as a small number of respondents who identified their gender as non-binary (n = 7). Due to the small sample size, we were unable to include those that identified as non-binary in the analyses of the influence of gender. Among the respondents, approximately 76% were Caucasian (n = 410), followed by 9.2% African American (n = 58). Because such a large proportion of the sample identified as Caucasian/White, we were unable to examine race/ethnicity groups in this analysis, which is a major limitation of this study that must be addressed in future research. Table 1 provides further details on respondent characteristics.

Data Preparation

Before analyzing the impact of personal factors on SDI:AR data, we engaged in a series of steps to prepare the data for analyses. To create six disability groups as shown in Table 1: (1) no disability, (2) intellectual disability, (3) autism spectrum disorder, (4) learning disabilities, (5) physical disabilities, and (6) other, a set of decision rules for disability grouping was followed to maximize the inclusion of people with varying disabilities for analyses as respondents could identify primary and secondary disabilities on the SDI:AR demographic section. This was also to

ensure that we recognized previous research suggesting the impact of disability labels, particularly intellectual disability and autism spectrum disorder on self-determination. First, anyone that selected intellectual disability as a primary or secondary disability were categorized in this group and the same for autism spectrum disorder. The only exception was eight individuals who selected both intellectual disability and autism spectrum disorder, and in these instances the disability selected as primary was utilized as there was not a large enough sample to generate a separate autism and intellectual disability group. Individuals who identified learning disabilities or physical disabilities as their primary disability were included in the learning disability or physical disability group unless they identified intellectual disability or autism spectrum disorder as their secondary disability. The "other" category included those that selected mental health disability, speech/language disability, hearing loss or deafness, vision loss or blindness, and/or traumatic brain injury as their primary disability and did not select intellectual disability or autism spectrum disorder as secondary due to insufficient sizes to analyze each of these groups separately.

Data Analysis

In analyzing the impact of personal factors on the SDI:AR, we built a series of models that allowed us to first examine respondent's overall, self-reported self-determination as well as variability in their responses to specific items (Research Question 1). Next, we could examine the impact of each personal factor (i.e., age, gender, disability label; Research Questions 2-4) on overall self-determination and item response. Given this was one of the first examinations of the use of the SDI:AR in adulthood, this approach provides critical information to understand the expression of self-determination and influence of personal factors. We used multilevel linear models (MLM; Snijders & Bosker, 1999) with the lme4 package (Bates, Maechler, Bolker, & Walker, 2013) in R (R Core Team, 2017). This approach accommodated our small sample size

(Muth et al., 2016) and enabled us to handle the 2 to 3% missing data on the respondents' demographic characteristics (see Table 1) via full information estimation methods.

Across models, we arbitrarily set SDI:AR item 21 ("I come up with ways to reach my goals."; agentic action) as the reference item for item-level comparisons. This enabled us to examine differences in expected values for each of the SDI:AR items in relation to this item. Overall self-determination (i.e., the self-determination construct) was fixed 0 for identification purposes. The intercept was allowed to randomly vary across the respondents; therefore, the differences among respondents with the respect to levels of self-determination was modeled and could be examined. This approach also enabled us to examine the impact of the personal factors on overall self-determination. The relations between each item and the personal factor (i.e., effect of the intercept and interaction effects) were modeled. Although we accounted for random variability across the respondents by assigning random intercepts, we did not randomly vary slopes for the impact of a personal factor, meaning that we assumed that whatever the impact was, it would be the same for all respondents with that personal factor. This approach was chosen as it allowed us to control for (and thereby examine) how each SDI:AR item related to the overall self-determination construct across respondents, telling us if items were differentially related to the construct overall or based on personal factors.

We built a series of models separately for each personal factor. Using one personal factor as an example, in the first model the personal factor (e.g., age) and SDI:AR items were concurrently entered as fixed effects while the intercept (i.e., construct of self-determination) was allowed to randomly vary which means that an individual's level of self-determination was estimated and represented by its random effects. In a second model (an omnibus test), interactions between the personal factor and each of the SDI:AR items added to examine if a personal factor had different effects on different items. Statistically significant interactions were

determined by a *p* value of less than 0.05. Then, we used a tear-down approach (Snijders & Boskers, 1999), where we kept only significant interactions in subsequent models. When the model only had significant interactions, we conducted χ^2 difference tests to examine whether the more parsimonious model (i.e., the pruned model) provided a better fit to the data as evidenced by a non-significant χ^2. This approach allowed us to confirm that the retained interactions were statistically meaningful.

Item differences were modeled for the personal factor reference group (i.e., the item-level effects), which indicated the expected difference on an item in relation to the reference item (SDI:AR 21). Therefore, the interaction effects between items and the personal factor represented the multiplicative effect of being in a non-reference group on the expected difference value. As such, to examine the influence of personal factors on item response, we primarily interpreted the interactions between specific items and each personal factor group. Lastly, we calculated pseudo R^2 to examine what proportion of variance was explained by adding the personal factor (Snijders & Boskers, 1999) at the item-level and for overall self-determination. Ultimately, the estimation of pseudo R^2 informed us whether the personal factor added to the explanation of variability of overall self-determination.

Results

Research Question 1: Variability of Overall Self-Determination and Variability across the Items

To answer the first research question, the SDI:AR items were entered into the MLM model as fixed effects. This model served as the baseline model to calculate pseudo R^2 in the remaining analyses. Table 2 shows the estimates of overall self-determination in the adult sample (Estimate = 80.51, *SE* = 0.95, *t* value = 84.47, *p* value < .001). Seven SDI:AR items were significantly higher or lower than the reference item (SDI:AR item 21) across the respondents

(see Table 2), including one agentic action item, three volitional action items, and three action-control beliefs items. Expected differences between the reference item and other items ranged between -5.04 (*SE* = 0.92; SDI:AR item 5; "I plan weekend activities I like to do."; volitional action) to 4.71 (*SE* = 0.92; SDI:AR item 15; "I make choices that are important to me."; action-control beliefs). This suggests expected scores on SDI:AR items ranged between 75.47 and 85.22. This also suggests that some items differed consistently across respondents, signifying the importance of further examining the impact of personal factors in explaining differences. Between-person variance (i.e., differences between respondents) on overall self-determination was 254, and within-person variance (i.e., variability of overall self-determination for respondents) was 213 (see Table 2), indicating the differences between the respondents explained about 54% of variance after the variance explained by the items.

Research Question 2: Impact of Age on Self-Determination

To examine the impact of age on responses, age (centered at age of 18) and SDI:AR items were entered as fixed effects to examine changes in overall self-determination and item responses based on age. Table 3 shows the series of models which were estimated to arrive at the final model (χ^2 (25) = 8.66, *p* value = .003), which indicated that age had an impact on overall self-determination, suggesting that as respondents age, they showed greater levels of overall self-determination. In examining the final pruned model (see Table 4), the impact of age on overall self-determination was estimated at 77.94 (*SE* = 1.26, *t* value = 62.02, *p* value < .001). The fixed effect of age indicated that as the age of respondents increased by one unit (i.e., one year), their overall self-determination as represented by the reference item increased by 0.16 units on average. However, the significant interaction between age and SDI:AR item 1 ("I have what it takes to reach my goals"; action-control beliefs) suggested a different pattern for that item. Respondents scored 0.14 points (*SE* = 0.05) lower per one year increase in age. Lastly, the

calculation of pseudo R^2 suggested that approximately 3% of variance was specifically predicted by age-related variability.

Research Question 3: Impact of Gender on Self-Determination

To examine the impact of gender on overall self-determination and item responses, gender and the SDI:AR items were entered as fixed effects with males treated as the reference group. The fixed effect of gender corresponded to the expected difference between females and males. In examining the interactions between items and gender, none of the interactions were significant in the omnibus model; therefore, there was no need to create a pruned model (see Table 5). The χ^2 difference tests resulted in a non-significant χ^2, which led to the base model being the final model for interpretation. As Table 6 reports, the impact of gender on overall self-determination was estimated at 78.43 (*SE* = 1.21, *t* value = 64.69, *p* value < .001); overall self-determination among females was 3.96 units (*SE* = 1.41, *t* value = 2.80, *p* value < .01), higher on average than for males. Further, the estimation of pseudo R^2 was about 4% of variance, indicating 4% of variance was specifically predicted by gender-related variability.

Research Question 4: Impact of Disability Label on Self-Determination

To examine the impact of disability label on overall self-determination and item responses, the disability groups created during data preparation (no disability, learning disabilities, intellectual disability, autism spectrum disorder, physical disabilities, and other disabilities) and the SDI:AR items were entered as fixed effects. In the initial model, the intercept, representing overall self-determination, was estimated based on the reference group (the no disability group). Next, a series of multiple models were estimated to arrive at the final model (χ^2 (32) = 56.9 *p* value <.001), and this pruned model retained five significant interactions between the disability groups and SDI:AR items (see Table 7). Closely looking at the final model, shown in Table 8, the impact of disability label on overall self-determination was

estimated at 84 (*SE* = 1.53, *t* value = 54.95, *p* value < .001). The fixed effects of the intellectual disability group (Estimate = -9.51, *SE* = 2.52, *t* value = -3.78, *p* value < .001) and the learning disabilities group (Estimate = -6.27, *SE* = 1.53, *t* value = -3.05, *p* value = .002) were significant. This suggests that overall self-determination reported by respondents with intellectual disability and with learning disabilities was significantly lower than the no disability group.

The five significant interactions on specific items suggested a complex relationship between item responses and disability label. Among adults with intellectual disability, scores on SDI:AR item 9 ("I choose activities I want to do."; volitional action) were significantly higher (compared to the reference item 21 in adults without disabilities). On the other hand, among adults with learning disabilities, scores on two items: SDI:AR 2 ("I think of more than one way to solve a problem."; agentic action) and 11 ("I figure out ways to get around obstacles."; agentic action) were significantly lower than the reference group on the reference item. Also, among adults with physical disabilities, scores on SDI:AR item 1 ("I have what it takes to reach my goals."; action-control beliefs) were significantly lower. Lastly, the estimation of pseudo R^2 indicated about 4% of variance was explained by disability label.

Discussion

The purpose of this study was to examine the impact of personal factors (age, gender, and disability label) on overall self-determination as well as on specific SDI:AR items among adults with disabilities. The present analyses advance our understanding of the impact of personal factors on the expression of self-determination during adulthood and suggest that personal factors have specific and nuanced impacts on overall self-determination and item responses on the SDI:AR. Findings from this study can provide guidance on how to begin to conceptualize supports for the expression of self-determination and its essential characteristics throughout the life course, considering personal factors when planning and implementing supports for self-

determination. In the following sections, we will discuss findings by personal factors.

Impact of age. Age had a significant impact on overall self-determination. Generally, older adults with and without disabilities scored higher than younger adults. This finding is aligned with the expectation that self-determination levels increase over time due to individual growth and the natural development of self-determination (Wehmeyer et al., 2017). It also suggests the same pattern established in adolescence (e.g., Shogren et al., 2018) may hold in adulthood. However, older respondents scored lower on SDI:AR item 1 ("I have what it takes to reach my goals."; action-control beliefs). Multiple hypotheses for this difference should be explored. For example, it is possible that adults, particularly during different adult life stages (e.g., at the start of late adulthood when transitioning to retirement), face complex choices and decisions related to life (e.g., work, family, living arrangement) and new environmental demands introduced by family, community, and society (Demick & Andreoletti, 2012; Levinson, 1986). Thus, there may be points when adults feel that they lack skills to achieve their goals, and future research should explore the impact of transitions throughout adulthood on SDI:AR scores and the supports needed to maintain meaningful levels of self-determination

Impact of gender. Females consistently scored higher than males on the SDI:AR. This finding adds to mixed research results in relation to the impact of gender on self-determination (Wehmeyer et al., 2011). For example, Shogren and colleagues (2018) did not find latent differences on the SDI:SR between female and male adolescents and young adults. On the other hand, some researchers have found, as in this study, that females demonstrated higher self-determination (Nota et al., 2007; Shogren et al., 2007). Clearly ongoing work is needed in this area, especially across the life course. However, higher overall self-determination among female, adult respondents with and without disabilities could perhaps be explained by expectations placed on females throughout adulthood. As more and more females obtain higher education and

advance in the labor market, they still have to navigate multiple responsibilities across work and home. According to Bianchi and colleagues (2012), women continue to do more housework and more caregiving than males, on average, particularly in adulthood. Therefore, females are expected to multi-task which might require decision making and problem solving, critical skills associated with self-determination, at greater intensities than men as they navigate adult roles and responsibilities. However, further research is needed to test specific mechanisms for these differences in self-determination across females and males in adulthood.

Impact of disability label. Adults without a disability generally scored higher than those with disabilities in overall self-determination; adults with learning disabilities or intellectual disability scored significantly lower compared to the no disability group. These results not only add to the existing research related to the impact of disability label on self-determination but also align with existing research with adolescents, suggesting ongoing disparities in self-determination in adulthood likely shaped by limited experiences and expectations associated with disability label. For example, the finding that adults with intellectual disability reported the lowest levels of self-determination is consistent with previous research and suggests ongoing struggles with raising societal expectations and providing effective supports and opportunities to enhance self-determination in this population. Additional research is needed on the expression of self-determination in adults with learning disabilities, as this group scored significantly lower than those without disabilities. Possible explanations include that adults with learning disabilities may not receive access to supports and services that they need after they exit the school system. For instance, most Medicaid waivers that fund long-term supports and services in the community do not typically cover adults with learning disabilities (Disabled and Elderly Health Programs Group, Center for Medicaid and State Operations, Centers for Medicare and Medicaid Services, & Department of Health and Human Services, 2015). Additionally, research suggests that people

with learning disabilities are less likely enroll in postsecondary education and gain employment with similar salary levels and working hours with those without learning disabilities (Lee, Rojewski, Gregg, & Jeong, 2015; Seo, Abbott, & Hawkins, 2008). Therefore, adults with learning disabilities may experience restricted opportunities for self-determination that differentially impact their self-determination in adulthood.

Other findings create additional areas of consideration for future research. For example, although across the all disability groups, respondents scored lower than the no disability group, significant differences were not found for overall self-determination in the autism spectrum disorder group, the physical disability, or other group when compared to the no disability group. This may have resulted from the small sample size in these groups, but the findings warrant future research as existing research with adolescents has suggested significantly lower levels of self-determination particularly in those with autism spectrum disorder compared to those with other disabilities (Chou et al. 2017). In this current study, adults with autism spectrum disorder actually scored more similarly to the no disability group. It is important to note, however, that the majority of the autism spectrum disorder sample did not have concomitant intellectual disability given our procedures for defining the groups, which may have influenced the findings and has not been specifically explored in past research.

The item level interactions also provide guidance for exploring more specific differences based on disability. Generally, those with disabilities scored lower on specific SDI:AR items, with one exception. Adults with intellectual disability scored higher on SDI:AR item 9, "I choose activities I want to do" (volitional action). Future research is needed, but it could be that adults with intellectual disability, are frequently exposed to the word "choose." Providing choice opportunities has been a major emphasis in services and supports for people with intellectual disability (Agran, Storey, & Krupp, 2010). However, this may lead to other aspects of self-

determination not being as strongly emphasized in supports and services (Shogren & Wehmeyer, 2017a). The remaining item-level interactions suggest that adults across the disability groups included in the sample scored even lower than expected than those without disabilities on specific items. For example, adults with learning disabilities scored lower compared to the reference group on two agentic action items (SDI:AR item 2 ["I think of more than one way to solve a problem."] and SDI:AR item 11 ["I figure out ways to get around obstacles."]). Ongoing work is needed to explore relations between these specific items and adults with learning disabilities, particularly examining the role of problem solving and self-regulatory strategies (Firth, Greaves, & Frydenberg, 2010).

Adults with physical disabilities scored lower on one action-control beliefs item (SDI:AR item 1 "I have what it takes to reach my goals."), compared to the reference group on the reference item. One possible explanation for this might be the phrase, "reach my goals", which implies that people feel that they can act in an empowered and goal-directed way (Shogren et al., 2015). Research has suggested that adults with physical disabilities may identify specific barriers to engaging in self-determined actions related to inaccessible environments, emphasizing these barriers as "the most obvious and compelling barrier to self-determination" (Stoner, Angell, House, & Goins, 2006, p. 15). Therefore, the findings may suggest unique experiences and support needs for adults with physical disabilities that should further explored.

Limitations and Future Research

Overall, the current study offers noteworthy insights in the self-determination of adults with disabilities. However, in interpreting the findings, there are a few limitations that must be considered. Our present analyses were restricted due to the small number of respondents in each group. Future recruitment efforts should focus on expanded sample sizes that allow more fine-grained analyses within groups as well as examination of the interaction of various personal

factors in shaping outcomes. Research is also needed on the impact of environmental factors and experiences, as well as the interaction of these factors with personal factors to more fully understand the influence of contextual factors (Shogren, Luckasson, & Schalock, 2014). Specific to the influence of age, we found that older respondents tended to score higher than younger respondents; however, due to the small size of middle to older adulthood respondents (e.g., ages 40s, 50s, and 60s), we were unable to create age groups representing specific stages of adulthood, which may be a direction for future research. Such work can build on previous research with adults that has suggested that adults with intellectual and developmental disabilities aged 40-49 scored lower in autonomy than peers aged 30-39 (Wehmeyer & Garner, 2003). Additionally, a major limitation was our inability to examine the impact of race/ethnicity on self-determination among adults with disabilities because the majority of the respondents were White/Caucasian. This occurred despite efforts in recruitment to target groups that supported potential respondents from diverse racial and ethnic backgrounds. It is important to develop and implement research recruitment protocols that foster the participation of diverse groups so that these perspectives are included in research (Sinclair et al., 2018); this issue may be particularly salient in adulthood given different recruitment strategies that must be utilized if schools are not an entry point for soliciting participation.

Furthermore, since the SDI:AR is publicly available online, anyone can access it. Thus, we do not have a system for verifying if respondents accurately disclosed their demographic information, including their disability status. We also did not specifically target recruiting a group of respondents without disabilities, however, this happened naturally given an interest in the survey and its noted accessibility and appropriateness for all people. Nonetheless, future work that has a larger and more representative sample both within disability populations and in the general population is needed. Lastly, data from the SDI:AR validation study represents a

measure of adult self-determination at a single time point, and the present study did not examine the sensitivity of the SDI:AR to change over time. Further work is needed to investigate developmental profiles of self-determination scores throughout adulthood to understand how differences emerge over time and are influenced by intervention.

Implications for Practice

Although the majority of self-determination research focuses on transition-age youth (Hagiwara, Shogren, & Leko, 2017), the findings from the current analyses confirm the importance of exploring self-determination in adulthood. It is necessary to continue to support adults with disabilities to develop and express their self-determination throughout adulthood based on their strengths and support needs, building on practices that are established during K-12 education and postsecondary transition (Wehmeyer et al., 2011). As a starting point, families and support providers can utilize information from the SDI:AR, including the summary report and intervention guide that are provided at the end of the survey to build supports and create opportunities to improve self-determination abilities. Further, it is feasible that adults with disabilities can utilize the SDI report guide to better understand themselves and advocate for supports and opportunities to enhance their self-determination, partnering with chosen family members and other supporters to create environmental resources and supports.

Although people with disabilities generally report perceiving themselves as self-determined (Shogren & Broussard, 2011), they feel that they are not given as many opportunities as they like to engage in self-determined actions (Nonnemacher & Bambara, 2011). Therefore, tools like the SDI:AR can be used to facilitate conversations between adults with disabilities and their supporters about facilitators and barriers to self-determination. Such a collaborative process based on insights of adults with disabilities can guide planning, developing, and implementing individualized self-determination interventions. Moreover, research-based practices for

promoting self-determination in adulthood exist, such as the *Self-Determined Career Design Model* (SDCDM; e.g., Dean et al., 2019). The SDCDM is a multi-component intervention to enable adults with disabilities to engage in self-regulated, goal-directed process of career and life design activities. Yet, studies of such interventions are a minority in self-determination research, as more focus is placed on transition-age youth. In both research and practice, implementing interventions to promote self-determination in adulthood is needed (Shogren et al., 2016). To actualize this, training and ongoing support should be provided for key supporters (e.g., families, professionals) to implement practices that support self-determination (Stoner et al., 2006).

Conclusions

Causal Agency Theory clearly suggests that, across the life course, people with or without disabilities can become more self-determined as they have opportunities and supports to learn, practice, and refine knowledge and abilities associated with self-determined actions. The present study suggests that the SDI:AR can be a meaningful tool to measure adult self-determination and can promote a greater focus on providing supports and opportunities for self-determination in adulthood. In order to actualize this, it is essential for not only adults with disabilities but also for supporters to have access to training to build or teach self-determination abilities and to do this in purposeful ways that support adults who are expected to take on various adult roles and responsibilities, considering personal factors (Shogren, Luckasson & Schalock, 2018). Ultimately, there is an ongoing need for greater exploration of the intersectionality of personal and environmental factors in shaping outcomes (Shogren et al., 2014). Exploring the interaction of personal and environmental factors in the development and expression of self-determination has the potential to further illuminate the influence of the contexts within which people live, work, and socialize on self-determination.

References

Abery, B. H., & Stancliffe, R. J. (2003). An ecological theory of self- determination: Theoretical foundations. In M. L. Wehmeyer, B. H. Abery, D. E. Mithaug, & R. J. Stancliffe (Eds.), *Theory in self-determination: Foundations for educational practice* (pp. 25-42). Springfield, IL: Thomas.

Ahearn, E. P. (1997). The use of visual analog scales in mood disorders: A critical review. *Journal of psychiatric research, 31*, 569-579.

Bates, D., Maechler, M., Bolker, B., & Walker, S. (2013). lme4: Linear mixed-effects models using eigen and S4. R package version 1.0-4. Retrieved from http://cran.r-project.org/web/packages/lme4/index.html

Bianchi, S. M., Sayer, L. C., Milkie, M. A., & Robinson, J. P. (2012). Housework: Who did, does or will do it, and how much does it matter?. *Social forces*, *91*, 55-63. doi:10.1093/sf/sos120

Brotherson, M. J., Cook, C. C., Erwin, E. J., & Weigel, C. J. (2008). Understanding self-determination and families of young children with disabilities in home environments. *Journal of Early Intervention, 31*, 22-43. doi:10.1177/1053815108324445

Disabled and Elderly Health Programs Group, Center for Medicaid and State Operations, Centers for Medicare and Medicaid Services, & Department of Health and Human Services. (2015, January). Application for a §1915(c) Home and Community-Based Waiver [Version 3.5]: Instructions, technical guide, and review criteria. Retrieved from http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/Downloads/Technical-Guidance.pdf

Chou, Y.-C., Wehmeyer, M. L., Palmer, S. B., & Lee, J. (2017). Comparisons of self-determination among students with autism, intellectual disability, and learning

disabilities: A multivariate analysis. *Focus on Autism and Other Developmental Disabilities, 32*, 124-132. doi:10.1177/1088357615625059

Dean, E. E., Shogren, K. A., Wehmeyer, M. L., Almire, B., & Mellenbruch, R. (2019). Career design and development for adults with intellectual disability: A program evaluation. *Advances in Neurodevelopmental Disorders, 3,* 111-118. doi:10.1007/s41252-018-0080-6

Demick, J., & Andreoletti, C. (Eds.). (2012). *Handbook of adult development*. Berlin, Germany: Springer Science & Business Media.

Hagiwara, M., Shogren, K., & Leko, M. (2017). Reviewing research on the Self-Determined Learning Model of Instruction: Mapping the terrain and charting a course to promote adoption and use. *Advances in Neurodevelopmental Disorders, 1*, 3-13. doi:10.1007/s41252-017-0007-7

Hagiwara, M., Shogren, K. A., & Lockman Turner, E. (2019). *Examining perceptions about self-determination and people with disabilities: A meta-synthesis*. Manuscript submitted for publication.

Lachapelle, Y., Wehmeyer, M. L., Haelewyck, M.-C., Courbois, Y., Keith, K. D., Schalock, R., . . . Walsh, P. N. (2005). The relationship between quality of life and self-determination: an international study. *Journal of Intellectual Disability Research, 49*, 740-744. doi:10.1111/j.1365-2788.2005.00743.x

Lee, I. H., Rojewski, J. W., Gregg, N., & Jeong, S.-O. (2015). Postsecondary education persistence of adolescents with specific learning disabilities or emotional/behavioral disorders. *The Journal of Special Education, 49*, 77-88. doi:10.1177/0022466914524826

Levinson, D. J. (1986). A conception of adult development. *American Psychologist, 41*, 3-13.

Lipscomb, S., Hamison, J., Liu Albert, Y., Burghardt, J., Johnson, D. R., & Thurlow, M. (2017). Preparing for life after high school: The characteristics and experiences of youth in 21

special education. Findings from the National Longitudinal Transition Study 2012. Volume 2: Comparisons across disability groups. Full report. (NCEE 2017-4018). Washington, D.C. National Center for Education Evaluation and Regional Assistance.

Nonnemacher, S. L., & Bambara, L. M. (2011). "I'm supposed to be in charge": Self-advocates' perspectives on their self-determination support needs. *Intellectual and Developmental Disabilities, 49*, 327-340. doi:10.1352/1934-9556-49.5.327

Nota, L., Ferrari, L., Soresi, S., & Wehmeyer, M. (2007). Self-determination, social abilities and the quality of life of people with intellectual disability. *Journal of Intellectual Disability Research, 51*, 850-865. doi:10.1111/j.1365-2788.2006.00939.x

Palmer, S. A., Wehmeyer, M. L. & Shogren, K. A. (2017). The development of self-determination during childhood. In M. L. Wehmeyer, K. A. Shogren, Little, T. D., & Lopez, S. J. (Eds.), *Development of self-determination through the life-course* (pp. 71-88). Dordrecht, The Netherlands: Springer. doi:10.1007/978-94-024-1042-6_6

R Core Team. (2017). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing.

Rausch, M., & Zehetleitner, M. (2014). A comparison between a visual analogue scale and a four point scale as measures of conscious experience of motion. *Consciousness and Cognition, 28*, 126-140. doi:10.1016/j.concog.2014.06.012

Seo, Y., Abbott, R. D., & Hawkins, J. D. (2008). Outcome status of students with learning disabilities at ages 21 and 24. *Journal of Learning Disabilities, 41*, 300-314. doi:10.1177/0022219407311308

Shogren, K. A., & Broussard, R. (2011). Exploring the perceptions of self-determination of individuals with intellectual disability. *Intellectual and Developmental Disabilities, 49*, 86-102. doi:10.1352/1934-9556-49.2.86

Shogren, K. A., Gotto, I., George, S., Wehmeyer, M. L., Shaw, L., Seo, H., . . . Barton, K. N. (2016). The impact of the Self-Determined Career Development Model on self-determination. *Journal of Vocational Rehabilitation, 45*, 337-350. doi:10.3233/JVR-160834

Shogren, K. A., Hagiwara, M., & Rifenbark, G. G. (2019). *Examining the psychometrics of the Self-Determination Inventory: Adult Report in adults intellectual and developmental disabilities.* Manuscript in preparation.

Shogren, K. A., Luckasson, R., & Schalock, R. L. (2014). The definition of "context" and its application in the field of intellectual disability. *Journal of Policy and Practice in Intellectual Disabilities, 11*, 109-116. doi:10.1111/jppi.12077

Shogren, K. A., Luckasson, R., & Schalock, R. L. (2018). The responsibility to build contexts that enhance human functioning and promote valued outcomes for people with intellectual disability: Strengthening system responsiveness. *Intellectual and Developmental Disabilities, 56*, 287-300.

Shogren, K. A., Shaw, L. A., Raley, S. K., & Wehmeyer, M. L. (2018). The impact of personal characteristics on scores on the Self-Determination Inventory: Student Report in adolescents with and without disabilities. *Psychology in the Schools, 55*, 1013-1026. doi:10.1002/pits.22174

Shogren, K. A., & Wehmeyer, M. L. (2017a). Preference and choice-expression. In M. L. Wehmeyer, K. A. Shogren, Little, T. D., & Lopez, S. J. (Eds.), *Development of self-determination through the life-course* (pp. 199-207). Dordrecht, The Netherlands: Springer. doi: 10.1007/978-94-024-1042-6_15

Shogren, K. A., & Wehmeyer, M. L. (2017b). Self-determination and goal attainment. In M. L. Wehmeyer & K. A. Shogren (Eds.), *Handbook of research-based practices for educating*

students with intellectual disability (pp. 255-273). New York, NY: Routledge.

Shogren, K. A., & Wehmeyer, M. L. (2017c). *Self-Determination Inventory: Student Report*. Lawrence, KS: Kansas University Center on Developmental Disabilities.

Shogren, K. A., Wehmeyer, M. L., Palmer, S. B., Forber-Pratt, A. J., Little, T. J., & Lopez, S. (2015). Causal agency theory: Reconceptualizing a functional model of self-determination. *Education and Training in Autism and Developmental Disabilities, 50*, 251-263.

Shogren, K. A., Wehmeyer, M. L., Palmer, S. B., Rifenbark, G. G., & Little, T. D. (2015). Relationships between self-determination and postschool outcomes for youth with disabilities. *Journal of Special Education, 48*, 256-267. doi:10.1177/0022466913489733

Shogren, K. A., Wehmeyer, M. L., Palmer, S. B., Soukup, J. H., Little, T. D., Garner, N., & Lawrence, M. (2007). Examining individual and ecological predictors of the self-determination of students with disabilities. *Exceptional Children, 73*, 488-510. doi:10.1177/001440290707300406

Sinclair, J., Hansen, S. G., Machalicek, W., Knowles, C., Hirano, K. A., Dolata, J. K., . . . Murray, C. (2018). A 16-Year Review of Participant Diversity in Intervention Research Across a Selection of 12 Special Education Journals. *Exceptional Children, 84*, 312-329. doi:10.1177/0014402918756989

Snijders, T. A., & Bosker, R. (1999). *Multilevel analysis: An introduction to basic and advanced multilevel modeling*. London, United Kingdom: Savage.

Stoner, J. B., Angell, M. E., House, J. J., & Goins, K. (2006). Self-determination: Hearing the voices of adults with physical disabilities. *Physical disabilities: Education and Related services, 25*, 3-35.

Walker, H. M., Calkins, C., Wehmeyer, M. L., Walker, L., Bacon, A., Palmer, S. B., . . . Gotto,

G. S. (2011). A social-ecological approach to promote self-determination. *Exceptionality, 19*, 6-18. doi:10.1080/09362835.2011.537220

Wehmeyer, M. L., & Abery, B. H. (2013). Self-determination and choice. *Intellectual and Developmental Disabilities, 51*, 399-411. doi:10.1352/1934-9556-51.5.399

Wehmeyer, M. L., Abery, B. H., Zhang, D., Ward, K., Willis, D., Hossain, W. A., . . . Calkins, C. (2011). Personal self-determination and moderating variables that impact efforts to promote self-determination. *Exceptionality, 19*, 19-30. doi:10.1080/09362835.2011.537225

Wehmeyer, M. L., & Garner, N. W. (2003). The impact of personal characteristics of people with intellectual and developmental disability on self-determination and autonomous functioning. *Journal of Applied Research in Intellectual Disabilities, 16*, 255-265. doi:10.1046/j.1468-3148.2003.00161.x

Wehmeyer, M. L., & Shogren, K. A. (2017). The development of self-determination during adolescence. In M. L. Wehmeyer, K. A. Shogren, Little, T. D., & Lopez, S. J. (Eds.), *Development of self-determination through the life-course* (pp. 89-98). Dordrecht, The Netherlands: Springer. doi:10.1007/978-94-024-1042-6_7

Wehmeyer, M. L., Shogren, K. A., Little, T. D., & Lopez, S. J., (Eds.). (2017). *Handbook on the development of self-determination*. New York, NY: Springer.

Table 1

Respondent Characteristics (N = 541)

Variable	n	%
Gender		
Female	277	51.2
Male	247	45.7
Binary	7	1.3
Missing	10	1.8
Age *Mean*	33.87	(*SD* = 13.87)
Disability labels		
No disability	118	21.8
Intellectual disability	116	21.4
Autism spectrum disorder	64	11.8
Learning disabilities	73	13.5
Physical disabilities	67	12.4
Other (e.g., mental health disability, vision loss or blindness)	88	16.3
Missing	15	2.8
Race/ethnicity*		
American Indian or Alaska Native	12	2.2
African American/Black	58	10.7
Native Hawaiian or Pacific Islander	3	0.6
White/Caucasian	410	75.8
Hispanic	15	2.8
Asian	13	2.4
Two or more races	14	2.6
Missing	16	3.0

Note. The total percentage of race/ethnicity does not add to 100% due to rounding.

Table 2

Variability of Overall Self-Determination and Variability across the Items

Fixed effects	Estimate	*SE*	*t* value	*p* value
Intercept	80.51	0.95	84.47	< .001
AR1	-0.76	0.92	-0.83	0.407
AR2	-2.05	0.92	-2.22	0.026
AR3	-0.71	0.92	-0.77	0.440
AR4	0.96	0.93	1.04	0.299
AR5	-5.04	0.92	-5.48	< .001
AR6	-0.86	0.92	-0.93	0.350
AR7	-0.24	0.92	-0.26	0.795
AR8	0.74	0.92	0.81	0.421
AR9	2.74	0.92	2.98	0.003
AR10	3.70	0.92	4.01	< .001
AR11	-0.38	0.92	-0.41	0.683
AR12	-2.25	0.92	-2.45	0.014
AR13	0.40	0.92	0.44	0.662
AR14	-0.75	0.92	-0.81	0.417
AR15	4.71	0.92	5.11	< .001
AR16	0.09	0.92	0.10	0.921
AR17	-1.71	0.92	-1.86	0.063
AR18	1.94	0.92	2.11	0.035
AR19	-1.22	0.92	-1.32	0.185
AR20	0.93	0.92	1.01	0.313
Random effects	Variance			
Intercept	254			
Residual	213			
AIC	BIC	logLik	deviance	
87899	88066	-43926	87853	

Note. Intercept = AR21; AR = SDI:AR; *SE* = standard error; logLik = log-likelihood.

Table 3

Model Comparison on the Impact of Age on the SDI:AR

Step	Retained item	*df*	AIC	BIC	logLik	deviance	χ^2	*p* value
Base Model	---	24	87090	87264	-43521	87042	---	---
Omnibus Model	Age*AR1	44	87093	87413	-43503	87005	27.37	0.096
Pruned Model 1	Age*AR1	25	87083	87264	-43516	87033	8.66	0.003

Note. logLik = log-likelihood; *df* = degree of freedom; AR = SDI:AR. Age was centered at 18 years old.

Table 4

Impact of Age on the SDI:AR (Final model)

Fixed effects	Estimate	*SE*	*t* value	*p* value
Intercept	77.94	1.26	62.02	< .001
Age	0.16	0.05	3.18	0.002
AR1	1.58	1.21	1.3	0.193
AR2	-1.97	0.93	-2.12	0.034
AR3	-0.58	0.93	-0.62	0.535
AR4	0.96	0.93	1.03	0.302
AR5	-5.04	0.93	-5.44	< .001
AR6	-0.84	0.93	-0.91	0.365
AR7	-0.21	0.93	-0.23	0.819
AR8	0.77	0.93	0.84	0.403
AR9	2.78	0.93	3	0.003
AR10	3.74	0.93	4.03	< .001
AR11	-0.38	0.93	-0.41	0.678
AR12	-2.29	0.92	-2.48	0.013
AR13	0.39	0.93	0.42	0.677
AR14	-0.79	0.93	-0.85	0.394
AR15	4.77	0.93	5.15	< .001
AR16	0.11	0.92	0.12	0.908
AR17	-1.71	0.92	-1.86	0.064
AR18	1.96	0.93	2.11	0.035
AR19	-1.22	0.92	-1.32	0.186
AR20	0.93	0.92	1.01	0.313
Significant Interactions Retained in the Final Model				
Age*AR1	-0.14	0.05	-2.94	0.003
Random effects	Variance			
Intercept	247			
Residual	214			

Note. Intercept = AR21; AR = SDI:AR; *SE* = Standard Error. Age was centered at 18 years old.

Table 5

Model Comparison on the Impact of Gender on the SDI:AR

Step	Retained items	*df*	AIC	BIC	logLik	deviance	χ^2	*p* value
Base Model	---	24	86367	86540	-43159	86319	---	---
Omnibus Model	---	44	86392	86710	-43152	86304	15	0.78

Note. logLik = log-likelihood; *df* = degree of freedom.

Table 6

Impact of Gender on the SDI:AR (Final model)

Fixed effects	Estimate	*SE*	*t* value	*p* value
Intercept	78.43	1.21	64.69	< .001
Female	3.96	1.41	2.80	0.005
AR1	-0.52	0.93	-0.56	0.577
AR2	-1.97	0.93	-2.11	0.035
AR3	-0.58	0.94	-0.62	0.533
AR4	1.07	0.94	1.14	0.255
AR5	-4.94	0.93	-5.31	< .001
AR6	-0.88	0.93	-0.94	0.348
AR7	-0.15	0.93	-0.17	0.869
AR8	0.89	0.93	0.95	0.340
AR9	2.96	0.93	3.17	0.002
AR10	3.71	0.93	3.98	< .001
AR11	-0.31	0.93	-0.34	0.737
AR12	-2.15	0.93	-2.31	0.021
AR13	0.48	0.93	0.52	0.605
AR14	-0.80	0.93	-0.86	0.389
AR15	4.90	0.93	5.27	< .001
AR16	0.16	0.93	0.17	0.862
AR17	-1.55	0.93	-1.68	0.094
AR18	2.01	0.93	2.16	0.031
AR19	-1.09	0.93	-1.17	0.241
AR20	0.91	0.93	0.98	0.327
Random effects	Variance			
Intercept	245			
Residual	213			

Note. Intercept = AR21; AR = SDI:AR; *SE* = Standard Error.

Table 7

Model Comparison on the Impact of Disability Label on the SDI:AR

Step	Retained Item	*df*	AIC	BIC	logLik	deviance	χ^2	*p* value
Base Model	---	28	87888	88091	-43916	87832	---	---
Omnibus Model	PD*AR1, LD*AR2, ID*AR9, ID*AR10, LD*AR11	128	87887	88817	-43816	87631	143.6	0.001
Pruned Model 1	All items from the Omnibus Model	32	87839	88071	-43887	87775	56.9	< .001

Note. logLik = log-likelihood; *df* = degree of freedom; LD = learning disabilities; ID = intellectual disability; PD = physical disabilities.

Table 8

Impact of Disability Label on the SDI:AR (Final model)

Fixed effects	Estimate	*SE*	*t* value	*p* value
Intercept	84.00	1.53	55.05	< .001
LD	-6.27	2.06	-3.05	0.002
ID	-9.51	2.52	-3.78	< .001
ASD	-3.55	2.36	-1.5	0.134
PD	-3.68	2.43	-1.52	0.130
OTHER	-1.01	2.20	-0.46	0.645
AR1	0.06	0.95	0.06	0.951
AR2	-0.57	0.99	-0.57	0.566
AR3	-0.72	0.92	-0.78	0.438
AR4	0.96	0.92	1.04	0.298
AR5	-5.04	0.92	-5.5	< .001
AR6	-0.86	0.92	-0.94	0.349
AR7	-0.24	0.92	-0.26	0.795
AR8	0.74	0.92	0.8	0.421
AR9	2.25	0.95	2.37	0.018
AR10	3.70	0.92	4.02	< .001
AR11	1.40	0.98	1.42	0.155
AR12	-2.25	0.92	-2.46	0.014
AR13	0.40	0.92	0.44	0.663
AR14	-0.75	0.92	-0.82	0.414
AR15	4.71	0.92	5.13	< .001
AR16	0.09	0.91	0.1	0.919
AR17	-1.71	0.92	-1.86	0.062
AR18	1.94	0.92	2.11	0.035
AR19	-1.21	0.92	-1.32	0.185
AR20	0.93	0.92	1.01	0.311
Significant Interactions Retained in the Final Model				
PD*AR1	-6.65	2.02	-3.29	0.001
LD*AR2	-6.83	1.63	-4.19	< .001
ID*AR9	4.45	2.13	2.09	0.037
LD*AR11	-8.32	1.63	-5.11	< .001
Random effects	Variance			
Intercept	244			
Residual	212			

Note. Intercept = AR22; AR = SDI:AR; *SE* = Standard Error; LD = learning disabilities; ID = intellectual disability; ASD = autism spectrum disorder; PD = physical disabilities; OTHER includes speech/language disability, hearing loss or deafness, vision loss or blindness, traumatic brain injury, mental health disability.

Chapter 4: Exploring the Impact of Environmental Factors on Scores on the Self-Determination Inventory: Adult Report

Engaging in self-determined actions based on one's own will is a basic human right for all people with and without disabilities (Americans with Disabilities Act, 1990; United Nations, 2006). Self-determination is a psychological construct that, according to Causal Agency Theory, is defined as a

> dispositional characteristic manifested as acting as the causal agent in one's life. Self-determined people (i.e., causal agents) act in service to freely chosen goals. Self-determined actions function to enable a person to be the causal agent is his or her life (Shogren, Wehmeyer, Palmer, Forber-Pratt, et al., 2015, p. 258).

Causal Agency Theory defines three essential characteristics of self-determined action: (a) volitional action, (b) agentic action, and (c) action-control beliefs (Shogren, Wehmeyer, Palmer, Forber-Pratt, et al., 2015). *Volitional action* refers to having the ability to identify goals in relation to one's interests, preferences, and needs. Associated abilities include choice making, decision making, goal setting, problem solving, and planning. *Agentic action* means being able to identify pathways to achieve one's goals, navigating barriers that are encountered. Associated abilities include self-management, goal attainment, problem solving, and self-advocacy. The third essential characteristic, *action-control beliefs*, refers to feeling empowered and supported in one's ability to set and go after their goals. Self-awareness and self-knowledge are key outcomes of action-control beliefs.

Positive Adult Outcomes of Self-Determination

A long line of research has established a relationship between self-determination and positive adult outcomes. For example, researchers have found student self-determination status when leaving high school predicted positive employment and community access outcomes one-

year postschool (Shogren, Wehmeyer, Palmer, Rifenbark et al., 2015). Likewise, for adults with intellectual disability ages 20 to 65, levels of self-determination significantly predicted work status (integrated employment vs. sheltered workshop; Martorell, Gutierrez-Recacha, Pereda, & Ayuso-Mateos, 2008). Moreover, a number of studies have shown a strong relationship between enhanced self-determination and positive outcomes in various contexts, including both education (e.g., Shogren, Palmer, Wehmeyer, Williams-Diehm, & Little, 2012) and employment (e.g., Dean, Shogren, Wehmeyer, Almire, & Mellenbruch, 2019). For example, after adults with intellectual disability received an intervention designed to promote self-determination and self-regulated, goal-directed actions that focus on career and life design, they achieved more positive integrated employment outcomes (Dean et al., 2019). Also, self-determination has been shown to be a significant predictor of people with intellectual and developmental disabilities working and living in more integrated settings (Wehmeyer & Garner, 2003). In a legal context, when young adults and adults with intellectual and developmental disabilities are their own guardians (as opposed to someone else being their guardian), they may be more likely to exercise self-determination, and social inclusion is promoted (Kanter, 2015; MacLeod, 2017). As such, it is critical to provide opportunities and supports for people with intellectual and developmental disabilities to use skills associated with self-determination in environments where they live, work, learn, and socialize (Shogren & Wehmeyer, 2017a).

Factors that Impact Promotion of Self-Determination in Adults with Disabilities

Many contextual factors can be strong indicators of how people develop and express self-determination and how people perceive their own and others' self-determination. Context is defined as "an integrative concept that provides a framework for describing personal and environmental factors, supports planning, and policy development" (Shogren, Luckasson, & Schalock, 2014, p. 111). Personal factors are those that generally cannot be not manipulated,

such as age, gender, race/ethnicity, culture, family, and social background. Environmental factors, on the other hand, are those that can be manipulated to enhance personal outcomes, such as community, organization, system-level policies and practices (Shogren et al., 2014). With regard to self-determination, various environmental factors can influence its development and expression across the life course, including school professional and classroom characteristics, policies and practices within adult support provider organizations, ongoing education and support available to people with disabilities and their key supporters (e.g., family members, professionals, people in community), and community and societal expectations (Hagiwara, Shogren, & Lockman Turner, 2019).

Adolescents and adults gradually learn that different contexts bring about different expectations which require the use of different skills and abilities (Wehmeyer & Shogren, 2017). This process of working through immediate contextual barriers and opportunities ultimately enables youth and adults to become more self-determined. However, when adolescents or adults with intellectual and developmental disabilities are restricted in their options for fully participating in their communities, researchers have established that these restrictions can hinder the development and expression of self-determination (Wehmeyer & Abery, 2013). For example, researchers have suggested that plenary guardianship, which is established by a court when a person is deemed to be unable to make legal decisions for themselves, can restrict self-determination as it restricts participation in decision making over the life course (Shogren, Wehmeyer, Uyanik, & Heidrich, 2017). However, there are less restrictive alternatives available, such as suported decision making that provide needed supports but still enables people with intellectual and developmental disabilities to retain legal rights and agency (Shogren et al., 2017). Essentially, environmental factors can influence the extent to which people with intellectual and developmental disabilities are afforded opportunities to learn and practice

abilities and knowledge associated with self-determination (Carter, Trainor, Owens, Sweden, & Sun, 2010). Therefore, it is critical to understand how environmental factors facilate or hinder oportunities for the development and the expression of self-determination in adults with intellectual and developmental disabilities. Such understanding will inform the design of effective supports that meet the needs of adults with intellectual and developmetnal disabilities to continute promoting self-determination throughtout the life course.

Assessments of Self-Determination

As a dispositional characteristic, self-determination is an enduring characteristic that can be meaningfully measured over time as people have opportunities to exercise and enhance the essential characteristics of self-determined action (Shogren & Wehmeyer, 2017a). Recently, a new self-determination measure, the *Self-Determination Inventory: Student Report* (SDI:SR; Shogren & Wehmeyer, 2017b) was developed and validated for adolescents and young adults ages 13 to 22. The SDI:SR is a self-report measure that includes 21 items aligned with Causal Agency Theory. The SDI:SR asks adolescents how they feel about their ability to make choices, decisions, problem solve, and set and attain goals. More recently, the *Self-Determination Inventory: Adult Report* (SDI:AR) was developed as an assessment of self-determination for adults with and without disabilities, extending the SDI:SR framework. The adult version includes the same set of 21 items as the student version, which allows comparisons across adolescence and adulthood. Initial analyses of the psychometrics of the SDI:AR suggest the reliability of items and validity of the scale in adults with intellectual and developmental disabilities ages 18 and over (Shogren, Hagiwara, & Rifenbark, 2019) as well as the ability of the scale to detect differences based on personal factors (Hagiwara, Shogren, & Rifenbark, 2019). Although the initial psychometrics of the SDI:AR have been explored, there has not yet been an investigation of the impact of environmental factors on the responses of adults with intellectual and

developmental disabilities on the SDI:AR. Such work, however, can provide a better understanding about possible relationships between self-determination and environmental factors in adulthood.

Purpose of Examining the Impact of Environmental Factors on the SDI:AR

As described, the impact of environmental factors is key to understanding self-determination in adults with intellectual and developmental disabilities. Although there are previous studies examining the relationship between adult self-determination and environmental factors (e.g., employment, living arrangement; Wehmeyer & Garner, 2003), no studies have investigated how environmental factors influence responses on the SDI:AR, including responses to specific items linked to each of the essential characteristics defined by Causal Agency Theory (i.e., volitional action, agentic action, and action-control beliefs). Such study will shed light on several areas. First, the SDI:AR was recently developed and introduced to the field to align with the SDI:SR and Causal Agency Theory, necessitating an examination of the degree to which the scale detects differences based on environmental factors in adults with intellectual and developmental disabilities. Second, research on the impact of environmental factors on responses on the SDI:AR will offer insights into the development and expression of self-determination in adulthood, which ultimately informs environment supports needed for self-determination throughout the life course. Therefore, the purpose of the present analyses was to examine how environmental factors (e.g., level of education attainment, employment status, living arrangement, having a legal guardian) impacted self-reported self-determination of adults with intellectual and developmental disabilities as measured by the SDI:AR. The following research questions were addressed.

1. In the adult population, how variable is overall self-determination and do responses vary across the SDI:AR items?

2. What is the impact of level of educational attainment on overall self-determination and item responses?
3. What is the impact of employment status on overall self-determination and item responses?
4. What is the impact of living arrangement on overall self-determination and item responses?
5. What is the impact of having a legal guardian on overall self-determination and item responses?

Method

Measure

Self-Determination Inventory: Adult Report. As described earlier, the SDI:AR is a self-report measure of self-determination for adults with and without disabilities ages 18 and over. It was developed to align with Causal Agency Theory and the SDI:SR and includes 21 items which assess overall self-determination and its three essential characteristics. The SDI:AR is administered online and offers embedded accessibility features which include approximately a third-grade reading level, in-text definitions for challenging words, and a read-aloud function for people who prefer to have items read aloud. The online platform employs a slider scale with anchors of *disagree* and *agree*, which is scored by the computer software between 0 and 99. This approach reduces discrimination errors and enables the data to be treated as continuous (Ahearn, 1997; Rausch & Zehetleitner, 2014). The SDI:AR asks customized demographic items at the end of the survey that are slightly different from the SDI:SR. For example, the SDI:SR includes disability status questions based on IDEA disability eligibility classifications such as emotional or behavioral disability, other health impairment, and multiple disabilities. However, these terms were removed from the adult version, but instead mental health disability was added. Additionally, “retired” was added to the work status question on the SDI:AR as this may be applicable to adults during certain life stages. When the survey is completed, a summary report is

immediately generated which indicates an overall self-determination score and scores for each essential characteristic of self-determination (e.g., volitional action, agentic action, action-control beliefs). A guide for interpreting scores and building interventions and supports is also provided.

Sample

The present analyses used a subset of data from the SDI:AR validation sample, which included 541 individuals with intellectual disability, autism spectrum disorder, hearing loss or deafness, vision loss or blindness, physical disabilities, traumatic brain injury, learning disabilities, mental health disabilities, and no disabilities. To generate the SDI:AR validation sample, after receiving Institutional Review Board approval, targeted recruitment efforts were undertaken. These efforts included (a) sharing recruitment materials through local, state, and national organizations' email listservs and social media accounts, and (b) seeking participation from postsecondary education institutions, disability-related agencies, and self-advocate groups in rural, suburban, and urban areas across the United States. Every survey taker who completed the assessment was offered a $5 gift card for their participation. Recruitment efforts focused on generating a sample that was representative of adults with varying disability labels (e.g., intellectual disability, autism spectrum disorder, physical disabilities, mental health disability) ages 18 and over. If a person with a disability identified having a guardian, permission to take the survey from the guardian was requested through the online system prior to the person with a disability taking the SDI:AR.

As our focus in the present study was to examine how environmental factors impacted self-determination in adults with intellectual and developmental disabilities, we narrowed the overall SDI:AR validation sample to a subset of individuals who endorsed disabilities associated with intellectual and developmental disabilities (n = 323). The mean age of the restricted sample was 34.41 (SD = 14.4; range 18-71). The most commonly endorsed an intellectual or related

developmental disability was intellectual disability (*n* = 116; 35.9%), followed by physical disabilities (*n* = 70; 21.7%) and autism spectrum disorder (*n* = 65; 20.1%). There were slightly more female respondents (*n* = 162; 50.2%) than males (*n* = 153; 47.4%). Among the respondents, approximately 77% were White/Caucasian (*n* = 249), followed by 10% African American/Black (*n* = 32). As far as level of education attainment among the respondents, graduating from high school was most frequently endorsed (*n* = 129; 39.9%), followed by having some college experience, an associate degree, or a degree from vocational/technical school (*n* = 88; 27.2%). In terms of employment status, the highest percentage (28.2%) of respondents worked part-time (*n* = 91) and the smallest percentage of respondents worked at a sheltered work program (*n* = 41; 12.7%). In terms of living arrangement, close to 60% of the respondents lived with family members (*n* = 187), followed by living on their own (23%; *n* = 73). Finally, approximately 64% of the respondents (*n* = 206) did not have a guardian as opposed to about 33% of the respondents (*n* = 107) who had a guardian. Table 1 reports further details on respondent characteristics.

Data Analysis

To analyze the impact of environmental factors on the SDI:AR, a series of statistical models were built. We first examined respondent's overall, self-reported self-determination as well as variability in their responses to specific items (Research Question 1). Then, we examined the impact of each environmental factor (i.e., level of education attainment, employment status, living arrangement, presence of a legal guardian; Research Questions 2-5) on overall self-determination and item response in separate models. Because this was one of the first examinations of the influence of environmental characteristics on the SDI:AR in adults with intellectual and developmental disabilities, this approach offers important information to understand how environmental factors influence the expression of self-determination. We used

the lme4 package (Bates, Maechler, Bolker, & Walker, 2013) in R (R Core Team, 2017) to create multilevel linear models (MLM; Snijders & Bosker, 1999). This statistical approach was chosen to accommodate our small sample size (Muth et al., 2016) and enabled us to handle the missing data (0.6 to 2.8%) on the respondents' demographic characteristics (see Table 1) via full information estimation methods.

Throughout the analyses, SDI:AR item 21 ("I come up with ways to reach my goals."; agentic action) was arbitrarily set as the reference item in R which allowed us to examine the difference in expected values for each of the SDI:AR items relative to this item. For identification purposes, we fixed overall self-determination (i.e., the self-determination construct) to 0. Differences among respondents with the respect to levels of self-determination were modeled and were examined by setting the intercept to randomly vary across the respondents. This approach enabled us to examine the impact of the environmental factors on overall self-determination and determine to what degree the mean structure of the SDI:AR was influenced by environmental factors. Specifically, we modeled the relations between an item and each environmental factor (i.e., the intercept and interaction effects were explicitly modeled) to determine whether expected values changed as a function of specific environmental factors. We did not allow slopes to randomly vary as it was assumed the impact was uniform in the population. This approach made it possible to control for and examine how each SDI:AR item related to overall self-determination, and if specific items were differentially related to the construct overall or based on environmental factors.

In the process of building the models to examine environmental factors, separate models were created for each environmental factor. We made specific decisions about the groups to include in each environmental factor analysis, based on sample size or within-group variability. For example, for the employment status factor, the "other group" which included respondents

who had an internship or were retired (n = 50; 15.5%) were dropped from the present analyses due to the large variability within the group. Also, given the small size of the "other" living arrangement group (n = 14; 4%) and the group of respondents who did not know if they had a guardian or not (n = 6; 1.9%) were not included in the analysis for that environmental factor.

In the first model for each environmental factor, the environmental factor (e.g., level of education attainment) and the SDI:AR items were simultaneously entered as fixed effects (predictor), and the intercept (i.e., construct of self-determination) was allowed to randomly vary, meaning that an individual's level of self-determination was estimated and represented by its random effects. In a second model, representing an omnibus test, an interaction between the environmental factor and the SDI:AR items were examined to determine if an environmental factor had different effects on different items. We then used a pruning process, specifically a tear-down approach (Snijders & Boskers, 1999), where we identified interactions with a p-value of less than 0.05 and retained these interactions in the next model. This more parsimonious model included only the significant interaction terms, representing the final model. Then, empirical evidence, in the form of χ^2 difference tests were conducted to examine whether the more parsimonious model (i.e., the pruned model) provided a better fit to the data as evidenced by a non-significant χ^2 ($p > .05$). This allowed us to confirm that the retained interactions were statistically meaningful. It is important to note that item differences were modeled for the reference group (i.e., the item-level effects), which represented the expected difference on an item relative to the reference item; the item-by-environmental factor interaction effects represented the multiplicative effect of belonging to a non-reference group on the expected difference value. In the present analyses, we focused on the interactions between specific items and each environmental factor. Furthermore, pseudo R^2 was estimated to examine the proportion reduction of variance explained by the inclusion of the environmental factor (Snijders &

Boskers, 1999) at the item-level and on overall self-determination.

Results

Research Question 1: Variability of Overall Self-Determination and Variability across Items

To answer the first research question, SDI:AR items were entered into the MLM model as fixed effects. This model served as the baseline model to calculate pseudo R^2 in the remaining analyses. Table 2 provides the estimate of overall self-determination in the adult sample (Estimate = 78.58, *SE* = 1.31, *t* value = 60.21, *p* value < .001). Four SDI:AR items were significantly higher or lower than the reference item (SDI:AR item 21 "I come up with ways to reach my goals."; agentic action) across the respondents (see Table 2), including two volitional action items and two action-control beliefs items. Differences between the reference item and other items ranged from -3.56 (*SE* = 1.27; SDI:AR item 5 "I plan weekend activities I like to do."; volitional action) to 5.59 (*SE* = 1.26; SDI:AR item 15 "I make choices that are important to me."; action-control beliefs). This indicates a wide range of scores across respondents and suggests the importance of further examining the impact of environmental factors in explaining such variability. Between-person variance (i.e., differences between respondents) on overall self-determination was 285, and within-person variance (i.e., variability of overall self-determination for respondents) was 243 (see Table 2), indicating the differences between the respondents explained approximately 54% of variance after the variance explained by the items.

Research Question 2: Impact of Level of Education Attainment on Self-Determination

To examine the impact of level of education attainment on overall self-determination and item responses, the four groups (no high school diploma or GED [General Education Development]; a high school diploma or GED; vocational/technical school, some college, or an associate degree; and a bachelor's degree or a graduate degree) and the SDI:AR items were

entered as fixed effects. The group of respondents who attained a bachelor's degree or a graduate degree served as a reference group; therefore, the intercept represented overall self-determination across the respondents with a bachelor's degree or a graduate degree. Table 3 shows the series of models which were estimated to arrive at the most parsimonious model (χ^2 (30) = 36.2, *p* value < .001), and this model retained four significant interactions. In the final model shown in Table 4, the impact of level of education attainment in the reference group on overall self-determination was estimated at 81.01 (*SE* = 2.33, *t* value = 34.84, *p* value < .001). The fixed effect of the no high school group (Estimate = -15.68, *SE* = 3.54, *t* value = -4.43, *p* value < .001) was also significant. This suggests that overall self-determination reported by respondents without a high school diploma or GED was 65.33, which was significantly lower than the group with a bachelor's degree or a graduate degree.

The four significant interactions on specific items suggested a multifaceted relationship between item responses and level of education attainment. Among adults without a high school diploma or GED, scores on SDI:AR item 7 ("I set my own goals."; agentic action) were significantly lower (Estimate = -9.13, *SE* = 2.91, *t* value = -3.14, *p* value < .01) than the reference item in those with a bachelor's degree or a graduate degree while scores on item 18 ("I choose what my room looks like."; volitional action) were significantly higher (Estimate = 8.71, *SE* = 2.91, *t* value = 2.99, *p* value < .01). Among adults with a high school diploma or GED, scores on SDI:AR items 2 ("I think of more than one way to solve a problem."; agentic action) and 11 ("I figure out ways to get around obstacles."; agentic action) were significantly lower by about 5 units than reference group scores on the reference item. The estimation of pseudo R^2 indicated approximately 8% of variance was explained by level of education attainment.

Research Question 3: Impact of Employment Status on Self-Determination

The three employment status groups (full-time, part-time, sheltered work, and not

working) and the SDI:AR items were entered as fixed effects to examine the impact of employment status on overall self-determination and item responses. The intercept, representing overall self-determination, was estimated based on the reference group (full-time) on the reference item. As the χ^2 difference test shows (see Table 5), the omnibus model did not suggest any statistically significant interactions on specific items or an improvement in model fit from the base model. Therefore, the base model was interpreted as the final model. Carefully looking at the final model (see Table 6), there were significant fixed effects for the not working group (Estimate = -11.58, *SE* = 2.83, *t* value = -4.09, *p* value < .001) and the part-time group (Estimate = -5.71, *SE* = 2.68, *t* value = -2.13, *p* value < .05). This suggests that overall self-determination reported by respondents who were not working and working part-time was significantly lower than the full-time group. However, there was not a significant effect for the sheltered work group. The estimation of pseudo R^2 indicated about 7% of variance was explained by employment status.

Research Question 4: Impact of Living Arrangement on Self-Determination

To examine the impact of living arrangement on overall self-determination and item responses, the SDI:AR items and the three groups (on their own, with family members, and group setting) with living on their own as the reference group were treated as fixed effects. As Table 7 reports, several models were estimated and after pruning, the final model (χ^2 (27) = 19.28, *p* value < .001) retained two significant interactions between differing living arrangements and SDI:AR items. As shown in Table 8, the estimate for the reference group (living on one's own) was 80.93 (*SE* = 2.17, *t* value = 37.23, *p* value < .001). The fixed effects of living with family (Estimate = -5.48, *SE* = 2.34, *t* value = -2.34, *p* value < .05) and living in a group setting (Estimate = 7.41, *SE* = 3.16, *t* value = 2.35, *p* value < .05) also were significant. This indicates that overall self-determination reported by respondents living with family was somewhat lower

than respondents living on their own while respondents living in a group setting reported somewhat higher overall self-determination than respondents living on their own.

Two significant interactions on specific items suggest complicated relations between item responses and living arrangement (see Table 8). Although overall self-determination in respondents living with family compared to those living on their own was lower, on SDI:AR items 1 ("I have what it takes to reach my goals."; action-control beliefs) respondents living with family scored significantly higher, compared to the reference item score in adults living on their own. On the other hand, overall self-determination in respondents living in a group setting was higher than those living on their own; however, an item-level effect showed that scores on SDI:AR 11 ("I figure out ways to get around obstacles."; agentic action) were significantly lower than those living on their own on the reference item. The estimation of pseudo R^2 indicated about 7% of variance was explained by living arrangement.

Research Question 5: Impact of Having a Legal Guardian on Self-Determination

The two groups (having a legal guardian and not having a legal guardian) and the SDI:AR items were entered as fixed effects with the guardian group treated as the reference group. As Table 9 shows, the omnibus model did not result in any significant interactions between SDI:AR items and having a guardian; therefore, there was no need to create a pruned model. The χ^2 difference tests resulted in a non-significant χ^2 ($p > .05$) result, which led to the base model being the final model for interpretation. As shown in Table 10, estimate for overall self-determination in the reference group (with a legal guardian) was 78.25 (*SE* = 1.90, *t* value = 41.25, *p* value < .001), whereas the fixed effect of not having a legal guardian was non-significant (Estimate = 0.79, *SE* = 2.07, *t* value = 0.38, *p* value = .70). This suggests the impact of having a legal guardian on overall self-determination was not significant. The estimation of pseudo R^2 indicated about 1% of variance was explained by having a legal guardian.

Discussion

The purpose of the present study was to examine how environmental factors impact self-determination of adults with intellectual and related developmental disabilities as measured by the SDI:AR. The findings suggest that specific environmental factors impact overall self-determination for adults with intellectual and developmental disabilities as well as responses on items. Before interpreting the results, the limitations of the present analyses must be acknowledged to provide directions for future research.

Limitations

The major limitation of this study was the small sample size and limited number of respondents within and across groups. For example, the small sample sizes in the groups that did not have a high school diploma or GED and worked in a sheltered work program likely influenced our ability to detect differences. Further, we did not have sufficient power to examine interactions across environmental factors (e.g., the relation between living arrangement and employment status) or to include analyses of the interaction of personal factors with environmental factors. Other research (Hagiwara, Shogren, & Rifenbark, 2019) suggests that personal factors also explain variability in self-determination outcomes, and these factors likely interact with environmental factors (e.g., those with differing disability labels are more likely or less likely to have specific education and employment opportunities; Petcu, Van Horn, & Shogren, 2017). Future research should target a larger and more diverse sample to conduct analyses of a more comprehensive array of contextual factors (i.e., personal and environmental factors) and their interactions (Shogren et al., 2014). Moreover, as these data represent a measure of adult self-determination at a single time point, we are unable to report on the sensitivity of the SDI:AR in measuring changes in self-determination over time. Because previous studies have suggested that levels of self-determination in adults with intellectual disability increased when

they transitioned from more restrictive work or living environments to more integrated environments (Wehmeyer & Bolding, 2001), future research is needed to track self-determination status over time and as a function of changes throughout adulthood.

Implications for Future Research and Practice

Despite the limitations, the findings suggest important directions for future research and practice. Given the variability in overall self-determination scores and item responses and the degree to which specific environmental factors explained variability in outcomes, ongoing work is needed to further research and develop interventions that promote changes in community, organization, system, and societal level factors that impact self-determination. This type of work is particularly needed in adulthood, a life stage when people encounter more situations in which they need to make decisions, self-direct, and problem solve across environments (Demick & Andreoletti, 2012; Levinson, 1986).

Impact of level of education attainment. The impact of level of education attainment on overall self-determination was significant. Respondents with a bachelor's degree or a graduate degree scored higher than groups without higher education. This finding may relate to research suggesting that youth with disabilities who demonstrate higher levels of autonomy (one of the component constructs of volitional action) in high school and psychological empowerment (one of the component constructs of action-control beliefs) were more likely to enroll in postsecondary education programs (Petcu et al., 2017). Our findings suggest that these higher levels of self-determination may be maintained as adults engage in and complete postsecondary education, supporting other research suggesting the impact of ongoing education on self-determination (Getzel & Thoma, 2008).

However, there were SDI:AR item by level of educational attainment interactions that were significant, suggesting different patterns from the overall findings. For example,

respondents without a high school diploma or GED scored significantly higher on item 18 (“I choose what my room looks like.”; volitional action) than the group with a bachelor’s degree or a graduate degree. Although further research is needed, one possible explanation is that adults with less educational opportunities could have more opportunities to make choices in their home environments. In other words, adults with less than high school education may be disconnected from other opportunities that adults with high school or greater education might access at work or in their communities (Bloom, 2010) and place value on making choices in the home environment, although replication of this finding and additional research is needed.

Adults without a high school diploma or GED scored lower on SDI:AR item 7 (“I set my own goals.”; agentic action) than those with a bachelor’s or a graduate degree on the reference item. Adults with a high school diploma or GED also scored lower than those with a bachelor’s or a graduate degree on SDI:AR items 2 (“I think of more than one way to solve a problem.”; agentic action) and 11 (“I figure out ways to get around obstacles.”; agentic action). These items are all representative of the same essential characteristic (agentic action), and abilities associated with agentic action include problem solving, planning, and self-regulation. Researchers have found that these skills are frequently used in higher education environments to successfully navigate college life (Getzel & Thoma, 2008). This may suggest that those that access higher education may have more opportunities to learn and practice these skills and abilities. It may also be that those with higher levels of education attainment are afforded more opportunities to use and practice these skills throughout their education and careers (Ross, Marcell, Williams, & Carlson, 2013). These discrepancies based on level of educational attainment suggest the importance of focusing on building abilities related to agentic action in adulthood, particularly during ongoing education. Future research is needed on the degree to which a person’s disability-related characteristics and other personal factors interact with educational opportunities and

shape their expression of self-determination and its essential characteristics across educational environments in adulthood.

Impact of employment status. Employment status had a significant impact on overall self-determination, with adults who reported that they did not work or worked part-time scoring significantly lower than those who had full-time employment. The finding that full-time employment is associated with higher levels of self-determination in the present sample may relate to the frequent assertion that taking the steps to find and maintain integrated employment, building career interests, and engaging in career-related choices and decisions during employment can contribute to enhanced self-determination in adulthood (Wehmeyer, Nota et al., 2018). Adults with full-time employment likely have more opportunities to engage in self-determined actions (e.g., self-awareness, choice making, decision making) in the workplace, which may contribute to higher scores on the SDI:AR in comparison to peers not working or working-part time.

An unexpected finding was that there was no significant effect of being in a sheltered work environment (i.e., this group did not have significantly different scores from the group that reported working full-time). Previous research has found lower levels of self-determination (Wehmeyer & Bolding, 1999), lower self-esteem, and lower quality of life across adults with intellectual disability working in sheltered work environments (Cimera, 2011). Furthermore, researchers have found that adults with intellectual disability in sheltered work programs compared to those in the community emphasized that community employment provided more autonomy and opportunities for self-determination (Murphy, Rogan, Handley, Kincaid, & Royce-Davis, 2002). As such, the present findings may simply be a result of the small sample size in this group (see Limitations), and thus additional research is needed. Also, anecdotally, many of the respondents who were in sheltered work environments were recruited at a self-

advocacy conference where they were learning skills and strategies to advocate for community inclusion for people with intellectual and developmental disabilities, including advocating for their right to live and work where they choose. Previous research on the impact of self-advocacy suggests that when adults with intellectual disability have access to self-advocacy groups, they feel more empowered to express their opinions and a greater sense of autonomy, which are associated with the essential characteristics of self-determination (Gilmartin & Slevin, 2010). Therefore, it is possible that the adults in this sample in sheltered work environments may have been developing self-determination abilities as a result of their self-advocacy activities. As the SDI:AR is context-neutral (i.e., it does not focus on self-determination abilities at, for example, home or work), adults may have been answering these questions thinking about what they were learning through self-advocacy. However, ongoing longitudinal work is needed throughout adulthood to explore the impact of developing self-determination abilities through self-advocacy and the degree to which these skills may generalize to other contexts.

Given that researchers have found that self-determination is a predictor of integrated employment for people with intellectual and developmental disabilities (Carter, Austin, & Trainor, 2012), future research should continue to examine the relationship between self-determination and employment throughout adulthood, including research on the impact of interventions to promote self-determination in adulthood (Wehmeyer, Shogren, & Thompson, 2018). One such practice is the *Self-Determined Career Design Model* (SDCDM; e.g., Dean et al., 2019), a research-based intervention to support adults with disabilities to engage in career and life design using a self-regulated, goal-directed process. Researchers have found that after exposure to the SDCDM, adults with intellectual and developmental disabilities had increases in employment outcomes aligned with their preferences and strengths (Dean et al., 2019). As such, future research should carefully investigate how environmental factors can be adjusted or

modified in order to provide opportunities and supports for adults with intellectual and developmental disabilities to enhance their self-determination, increase access to employment, and design their long-term career trajectory.

Impact of living arrangement. There was a significant relationship between living arrangements of adults with intellectual and developmental disabilities and self-reported self-determination. The findings suggest that compared to adults living on their own, those living with families reported lower levels of self-determination, while those living in group settings reported higher levels of self-determination. However, it is important to note that the small sample size of adults living in group settings may have influenced outcomes, and like the sheltered work findings referenced previously, many of those in group living arrangements were recruited at a self-advocacy conference. Therefore, it is possible that these adults were learning self-advocacy and other important abilities related self-determination, which may have influenced their responses as noted for the employment-related findings. Future research is needed with larger samples.

In terms of the findings related to lower overall self-determination in those living with their families compared to those living on their own, it may be that there are differences in how families support decision making and self-determination in the home environment that can, in some cases, lead to fewer opportunities and experiences to engage in self-determined actions (Curryer, Stancliffe, Dew, & Wiese, 2018). This may be particularly true during certain life stages as adults with intellectual and developmental disabilities and their families are negotiating how to navigate changing roles in adulthood (Burke, Lee, Hall, & Rossetti, 2019; Hewitt, Agosta, Heller, Williams, & Reinke, 2013). Promoting self-determination throughout adulthood has not received significant attention, despite the shifts in families' roles. Future research and practice are needed that focuses on training, information, and ongoing supports (e.g., family-to-

family support groups) for families to explore ways to promote self-determination throughout adulthood (Hewitt et al., 2013).

There were item-level interactions, for example those living in group settings scored significantly lower on SDI:AR item 11 (“I figure out ways to get around obstacles.”; agentic action) than those living their own. One possible explanation might be that adults have not had as many opportunities to navigate barriers and obstacles because of the types of supports they receive in group settings compared to adults living in the community. This finding also aligns with other research that found supervisors at sheltered work programs tend to be overprotective with employees with intellectual disability, which results in limited opportunities for these employees to develop and practice decision-making and problem-solving skills (Flores, Jenaro, Begoña Orgaz, & Victoria Martín, 2011). Previous research has shown that when staff received an intervention to increase the amount of time providing effective supports for adults with intellectual and developmental disabilities to participate in meaningful activities, it created more opportunities for self-determination (Stancliffe, Jones, Mansell, & Lowe, 2008). Future research is needed to explore the impact of support providers’ expectations of the self-determination of adults, as well as policies and practices within adult support provider organizations that differentially support self-determination.

On the other hand, those living with family members scored higher on SDI:AR item 1 (“I have what it takes to reach my goals.”; action-control beliefs) than adults living on their own. A possible explanation for this finding could be that adults who live at home have increased supports for exploring different ways to achieve goals and feel empowered, which are linked to action-control beliefs (Curryer et al., 2018). Considering that more and more adults are living in the family home throughout adulthood (Larson et al., 2016), future research should explore what activities and practices related to self-determination adults with intellectual and developmental

disabilities are engaging currently at home to identify strengths and supports to further enhance individual and familial self-determination.

Impact of having a guardian. There was not a significant impact of guardianship status on self-determination. The small and imbalanced sample size of those who had a legal guardian and those that did not likely contributed to this result. Further, data suggests that there is wide variability of the quality of guardianship arrangements (Uekert & Van Duizend, 2011), which may have contributed additional variability that was not accounted for in the present analyses. Therefore, future research is needed, particularly given the increased recognition of the potential of plenary guardianship to restrict legal agency and self-determination (Shogren et al., 2019). Given the newness of this line of inquiry, it may be necessary to gather data in multiple ways to determine the best way to quantify the opportunities afforded to adults with intellectual and developmental disabilities to engage in supported decision making and other arrangements that promote self-determination.

Conclusion

Causal Agency Theory emphasizes the importance of environments that support and enhance the development of self-determination, and this study highlights the significant impact of environmental factors on self-determination measured by the SDI:AR. Overall, and consistent with previous research, the present study suggests that certain environmental factors facilitate a greater expression of self-determination in adults with intellectual and developmental disabilities while others restrict its expression. Ongoing work should examine the interaction between the personal and environmental factors (Shogren et al., 2014), as well as develop and evaluate ways to integrate consideration of environmental factors and their influence on self-determination when building systems of supports in adulthood.

References

Ahearn, E. P. (1997). The use of visual analog scales in mood disorders: A critical review. *Journal of Psychiatric Research, 31*, 569-579.

Americans With Disabilities Act of 1990, Pub. L. No. 101-336, 104 Stat. 328 (1990).

Bates, D., Maechler, M., Bolker, B., & Walker, S. (2013). lme4: Linear mixed-effects models using eigen and S4. R package version 1.0-4. Retrieved from http://cran.r-project.org/web/packages/lme4/index.html

Bloom, D. (2010). Programs and policies to assist high school dropouts in the transition to adulthood. *The Future of Children, 20*, 89-108.

Burke, M. M., Lee, C. E., Hall, S. A., & Rossetti, Z. (2019). Understanding decision making among individuals with intellectual and developmental disabilities (IDD) and their siblings. *Intellectual and Developmental Disabilities, 57*, 26-41. doi:10.1352/1934-9556-57.1.26

Carter, E. W., Trainor, A., Owens, L., Sweden, B., & Sun, Y. (2010). Self-determination prospects of youth with high-incidence disabilities: Divergent perspectives and related factors. *Journal of Emotional and Behavioral Disorders, 18*, 67-81. doi:10.1177/1063426609332605

Carter, E. W., Austin, D., & Trainor, A. A. (2012). Predictors of postschool employment outcomes for young adults with severe disabilities. *Journal of Disability Policy Studies, 23*, 50-63. doi:10.1177/1044207311414680

Cimera, R. E. (2011). Does being in sheltered workshops improve the employment outcomes of supported employees with intellectual disabilities? *Journal of Vocational Rehabilitation, 35*, 21-27.

Curryer, B., Stancliffe, R. J., Dew, A., & Wiese, M. Y. (2018). Choice and control within family

relationships: The lived experience of adults with intellectual disability. *Intellectual and Developmental Disabilities, 56*, 188-201. doi:10.1352/1934-9556-56.3.188

Dean, E. E., Shogren, K. A., Wehmeyer, M. L., Almire, B., & Mellenbruch, R. (2019). Career design and development for adults with intellectual disability: A program evaluation. *Advances in Neurodevelopmental Disorders, 3,* 111-118. doi:10.1007/s41252-018-0080-6

Demick, J., & Andreoletti, C. (Eds.). (2012). *Handbook of adult development*. Berlin, Germany: Springer Science & Business Media.

Flores, N., Jenaro, C., Begoña Orgaz, M., & Victoria Martín, M. (2011). Understanding quality of working life of workers with intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities, 24*, 133-141. doi:10.1111/j.1468-3148.2010.00576.x

Getzel, E. E., & Thoma, C. A. (2008). Experiences of college students with disabilities and the importance of self-determination in higher education settings. *Career Development for Exceptional Individuals, 31*, 77-84.

Gilmartin, A., & Slevin, E. (2010). Being a member of a self-advocacy group: Experiences of intellectually disabled people. *British Journal of Learning Disabilities, 38*, 152-159. doi:10.1111/j.1468-3156.2009.00564.x

Hagiwara, M., Shogren, K. A., & Lockman Turner, E. (2019). *Examining perceptions about self-determination and people with disabilities: A meta-synthesis*. Manuscript submitted for publication.

Hagiwara, M., Shogren, K. A., & Rifenbark, G. G. (2019). *Examining the impact of personal factors on scores on the Self-Determination Inventory: Adult Report (SDI:AR)*. Manuscript submitted for publication.

Hewitt, A., Agosta, J., Heller, T., Williams, A. C., & Reinke, J. (2013). Families of individuals with intellectual and developmental disabilities: Policy, funding, services, and

experiences. *Intellectual and Developmental Disabilities, 51*, 349-359. doi:10.1352/1934-9556-51.5.349

Kanter, A. (2015). Guardianship for young adults with disabilities as contrary to the language and purpose of the Individuals with Disabilities Education Improvement Act. *Journal of International Aging, Law & Policy, 8*, 1-68.

Levinson, D. J. (1986). A conception of adult development. *American Psychologist, 41*, 3-13.

Larson, S., Hallas-Muchow, L., Aiken, F., Taylor, B., Pettingell, S., Hewitt, A., ... (2016). *In-home and residential long-term supports and services for persons with intellectual or developmental disabilities: Status and trends through 2013*. Minneapolis: University of Minnesota, Research and Training Center on Community Living, Institute on Community Integration.

Martorell, A., Gutierrez-Recacha, P., Pereda, A., & Ayuso-Mateos, J. L. (2008). Identification of personal factors that determine work outcome for adults with intellectual disability. *Journal of Intellectual Disability Research, 52*, 1091-1101. doi:10.1111/j.1365-2788.2008.01098.x

MacLeod, K. (2017). “I should have big dreams”: A qualitative case study on alternatives to guardianship. *Education and Training in Autism and Developmental Disabilities, 52*, 194-207.

Murphy, S. T., Rogan, P. M., Handley, M., Kincaid, C., & Royce-Davis, J. (2002). People’s situations and perspectives eight years after workshop conversion. *Mental Retardation, 40*, 30-40. doi:10.1352/0047-6765(2002)040<0030:Pssape>2.0.Co;2

Petcu, S. D., Van Horn, M. L., & Shogren, K. A. (2017). Self-determination and the enrollment in and completion of postsecondary education for students with disabilities. *Career*

Development and Transition for Exceptional Individuals, 40, 225-234. doi:10.1177/2165143416670135

R Core Team. (2013). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing.

Rausch, M., & Zehetleitner, M. (2014). A comparison between a visual analogue scale and a four point scale as measures of conscious experience of motion. *Consciousness and Cognition, 28*, 126-140. doi:10.1016/j.concog.2014.06.012

Ross, J., Marcell, J., Williams, P., & Carlson, D. (2013). Postsecondary education employment and independent living outcomes of persons with autism and intellectual disability. *Journal of Postsecondary Education and Disability, 26*, 337-351.

Shogren, K. A., Hagiwara, M., & Rifenbark, G. G. (2019). *Examining the psychometrics of the Self-Determination Inventory: Adult Report in adults intellectual and developmental disabilities.* Manuscript in preparation.

Shogren, K. A., Luckasson, R., & Schalock, R. L. (2014). The definition of "context" and its application in the field of intellectual disability. *Journal of Policy and Practice in Intellectual Disabilities, 11*, 109-116. doi:doi:10.1111/jppi.12077

Shogren, K. A., Palmer, S. B., Wehmeyer, M. L., Williams-Diehm, K., & Little, T. D. (2012). Effect of intervention with the Self-Determined Learning Model of Instruction on access and goal attainment. *Remedial and Special Education, 33*, 320-330. doi:10.1177/0741932511410072

Shogren, K. A., Rifenbark, G. G., Wehmeyer, M. L., Dean, E. E., Killeen, M. B., & Karsevar, J. (2019). *Refining the Supported Decision Making Inventory*. Manuscript for publication.

Shogren, K. A., & Wehmeyer, M. L. (2017a). Self-determination and goal attainment. In M. L. Wehmeyer & K. A. Shogren (Eds.), *Handbook of research-based practices for educating*

students with intellectual disability (pp. 255-273). New York, NY: Routledge.

Shogren, K. A., & Wehmeyer, M. L. (2017b). *Self-Determination Inventory: Student Report*. Lawrence, KS: Kansas University Center on Developmental Disabilities.

Shogren, K. A., Wehmeyer, M. L., Palmer, S. B., Forber-Pratt, A. J., Little, T. J., & Lopez, S. (2015). Causal agency theory: Reconceptualizing a functional model of self-determination. *Education and Training in Autism and Developmental Disabilities, 50*, 251-263.

Shogren, K. A., Wehmeyer, M. L., Palmer, S. B., Rifenbark, G. G., & Little, T. D. (2015). Relationships between self-determination and postschool outcomes for youth with disabilities. *Journal of Special Education, 48*, 256-267. doi:10.1177/0022466913489733

Shogren, K. A., Wehmeyer, M. L., Uyanik, H., & Heidrich, M. (2017). Development of the Supported Decision Making Inventory System. *Intellectual and Developmental Disabilities, 55*, 432-439. doi:10.1352/1934-9556-55.6.432

Stancliffe, R. J., Jones, E., Mansell, J., & Lowe, K. (2008). Active support: A critical review and commentary. *Journal of Intellectual and Developmental Disability, 33*, 196-214.

The United Nations. (2006). Convention on the Rights of Persons with Disabilities. *Treaty Series*, *2515*, 3.

Uekert, B. K., & Van Duizend, R. (2011). Adult guardianships: A “best guess” national estimate and the momentum for reform. Future trends in state courts 2011: Special focus on access to justice. Retrieved from https://ncsc.contentdm.oclc.org/digital/collection/ctadmin/id/1846/

Wehmeyer, M. L., & Abery, B. H. (2013). Self-determination and choice. *Intellectual and Developmental Disabilities, 51*, 399-411. doi:10.1352/1934-9556-51.5.399

Wehmeyer, M. L., & Bolding, N. (1999). Self-determination across living and working environments: A matched-samples study of adults with mental retardation. *Mental Retardation, 37,* 353-363. doi:10.1352/0047-6765(1999)037<0353:Salawe>2.0.Co;2

Wehmeyer, M. L., & Bolding, N. (2001). Enhanced self-determination of adults with intellectual disability as an outcome of moving to community-based work or living environments. *Journal of Intellectual Disability Research, 45*, 371-383. doi:10.1046/j.1365-2788.2001.00342.x

Wehmeyer, M. L., & Garner, N. W. (2003). The impact of personal characteristics of people with intellectual and developmental disability on self-determination and autonomous functioning. *Journal of Applied Research in Intellectual Disabilities, 16*, 255-265. doi:10.1046/j.1468-3148.2003.00161.x

Wehmeyer, M. L., Nota, L., Soresi, S., Shogren, K. A., Morningstar, M. E., Ferrari, L., . . . DiMaggio, I. (2018). A crisis in career development: Life designing and implications for transition. *Career Development and Transition for Exceptional Individuals.* Advance online publication. doi:10.1177/2165143417750092

Wehmeyer, M. L., & Shogren, K. A. (2017). The development of self-determination during adolescence. In M. L. Wehmeyer, K. A. Shogren, T. D. Little, & S. J. Lopez (Eds.), *Development of self-determination through the life-course* (pp. 89-98). Dordrecht, The Netherlands: Springer. doi:10.1007/978-94-024-1042-6_7

Wehmeyer, M. L., Shogren, K. A., & Thompson, J. R. (2018). Self-determination and adult transitions and supports. *New Directions for Adult and Continuing Education,* 160, 53-62. doi:10.1002/ace.20299

Table 1

Respondent Characteristics (N = 323)

Variable	n	%
Gender		
Female	162	50.2
Male	153	47.4
Binary	6	1.9
Missing	2	0.6
Age *Mean*	34.41	(*SD* = 14.4)
Disability Labels		
Intellectual disability	116	35.9
Autism spectrum disorder	65	20.1
Hearing loss or deafness	43	13.3
Vision loss or blindness	14	4.3
Physical disabilities	70	21.7
Traumatic brain injury	15	4.6
Race/Ethnicity		
American Indian or Alaska Native	7	2.2
African American/Black	32	9.9
Native Hawaiian or Pacific Islander	0	0
White/Caucasian	249	77.1
Hispanic	12	3.7
Asian	5	1.5
Two or more races	9	2.8
Missing	9	2.8
Level of Education Attainment		
No high school diploma or GED	40	12.4
High school graduate (diploma or GED)	129	39.9
Vocational/technical school, some college, or associate degree	88	27.2
Bachelor's degree or graduate degree	59	18.3
Missing	7	2.2
Employment Status		
Full-time	69	21.4
Part-time	91	28.2
Paid job in a sheltered work program	41	12.7
Not working	72	22.3
Other (e.g., internship, retired)	50	15.5
Living Arrangement		

On their own	73	23
With family member(s) (e.g., spouse, parent, child)	187	58
Group setting (e.g., group home, shared living)	47	15
Other (e.g., dorm)	14	4
Missing	2	0.1
Presence of a Guardian		
No	206	63.8
Yes	107	33.1
I don't know	6	1.9
Missing	4	1.2

Note. GED = General Education Development. The total percentages by variable may not add to 100% due to rounding.

Table 2

Variability of Overall Self-Determination and Items across the Respondents

Fixed effects	Estimate	*SE*	*t* value	*p* value
Intercept	78.58	1.31	60.21	< .001
AR1	-1.45	1.27	-1.14	0.253
AR2	-1.95	1.27	-1.54	0.123
AR3	-1.37	1.27	-1.08	0.281
AR4	1.24	1.27	0.97	0.330
AR5	-3.56	1.27	-2.81	0.005
AR6	-1.02	1.27	-0.80	0.423
AR7	0.21	1.26	0.17	0.868
AR8	0.43	1.27	0.34	0.736
AR9	3.44	1.27	2.71	0.007
AR10	4.53	1.27	3.57	< .001
AR11	-1.29	1.27	-1.01	0.310
AR12	-2.42	1.26	-1.91	0.056
AR13	0.88	1.27	0.69	0.489
AR14	0.07	1.27	0.06	0.954
AR15	5.59	1.26	4.43	< .001
AR16	0.44	1.26	0.35	0.728
AR17	-1.49	1.26	-1.18	0.236
AR18	1.98	1.26	1.57	0.117
AR19	-1.34	1.26	-1.07	0.287
AR20	0.92	1.26	0.73	0.467
Random effects	Variance			
Intercept	285			
Residual	243			
AIC	BIC	logLik	deviance	
53860	54016	-26907	53814	

Note. Intercept = AR21; AR = SDI:AR; *SE* = standard error; logLik = log-likelihood.

Table 3

Model Comparison on the Impact of Level of Education Attainment

Step	Retained item	*df*	AIC	BIC	logLik	deviance	χ^2	*p* value
Base Model	---	26	52791	52966	-26370	52739	---	---
Omnibus Model	AR2*HS, AR7*NH, AR11*HS, AR18*NH	86	52796	53375	-26312	52624	78.9	0.024
Pruned Model	All items from the Omnibus Model	30	52763	52965	-26352	52703	36.2	< .001

Note. logLik = log-likelihood; *df* = degree of freedom; AR = SDI:AR; HS = high school graduate; NH = no high school diploma or GED.

Table 4

Impact of Level of Education Attainment on Overall Self-Determination and Items (Final model)

Fixed effects	Estimate	*SE*	*t* value	*p* value
Intercept	81.01	2.33	34.84	<.001
NH	-15.68	3.54	-4.43	<.001
HS	-0.33	2.61	-0.12	0.901
VT/AD	-1.61	2.79	-0.58	0.564
AR1	-1.49	1.28	-1.17	0.243
AR2	0.11	1.50	0.07	0.940
AR3	-1.51	1.28	-1.18	0.239
AR4	1.05	1.29	0.82	0.415
AR5	-3.75	1.28	-2.93	0.003
AR6	-1.15	1.28	-0.90	0.370
AR7	1.39	1.32	1.06	0.291
AR8	0.56	1.28	0.44	0.664
AR9	3.58	1.28	2.80	0.005
AR10	4.72	1.28	3.69	<.001
AR11	1.17	1.49	0.78	0.433
AR12	-2.25	1.28	-1.77	0.077
AR13	1.03	1.28	0.80	0.424
AR14	0.23	1.28	0.18	0.856
AR15	5.79	1.27	4.55	<.001
AR16	0.44	1.27	0.35	0.728
AR17	-1.45	1.27	-1.14	0.253
AR18	1.02	1.32	0.78	0.437
AR19	-1.43	1.27	-1.12	0.262
AR20	1.03	1.27	0.81	0.417
Significant Interactions Retained in the Final Model				
HS*AR2	-5.38	1.89	-2.85	0.004
NH*AR7	-9.13	2.91	-3.14	0.002
HS*AR11	-5.75	1.90	-3.03	0.002
NH*AR18	8.71	2.91	2.99	0.003
Random effects	Variance			
Intercept	261			
Residual	242			

Note. Intercept = AR21; AR = SDI:AR; *SE* = standard error; NH = no high school diploma or GED; HS = high school graduate; VT/AD = vocational/technical school, some college, or associate degree.

Table 5

Model Comparison on the Impact of Employment Status

Step	Retained item	*df*	AIC	BIC	logLik	deviance	χ^2	*p* value
Base Model	---	26	45899	46071	-22924	45847	---	---
Omnibus Model	---	86	45950	46518	-22889	45778	68.92	0.82

Note. logLik = log-likelihood; *df* = degree of freedom.

Table 6

Impact of Employment Status on Overall Self-Determination and Items (Final model)

Fixed effects	Estimate	*SE*	*t* value	*p* value
Intercept	83.67	2.22	37.71	<.001
NW	-11.58	2.83	-4.09	<.001
PT	-5.71	2.68	-2.13	0.034
SW	3.24	3.32	0.98	0.329
AR1	-1.28	1.35	-0.95	0.343
AR2	-2.49	1.35	-1.85	0.065
AR3	-1.76	1.35	-1.30	0.193
AR4	-0.06	1.36	-0.04	0.966
AR5	-3.90	1.35	-2.89	0.004
AR6	-1.94	1.35	-1.44	0.151
AR7	-0.21	1.35	-0.16	0.874
AR8	0.83	1.35	0.62	0.537
AR9	2.97	1.35	2.20	0.028
AR10	4.71	1.35	3.49	<.001
AR11	-2.09	1.35	-1.55	0.121
AR12	-2.43	1.35	-1.81	0.071
AR13	0.34	1.35	0.25	0.803
AR14	-0.14	1.35	-0.11	0.916
AR15	5.59	1.34	4.16	<.001
AR16	0.68	1.34	0.50	0.614
AR17	-0.87	1.34	-0.65	0.514
AR18	1.62	1.34	1.20	0.228
AR19	-1.24	1.34	-0.93	0.354
AR20	0.91	1.34	0.67	0.500
Random effects	Variance			
Intercept	265			
Residual	236			

Note. Intercept = AR21; AR = SDI:AR; *SE* = standard error; NW = not working; PT = part-time; SW = sheltered work.

Table 7

Model Comparison on the Impact of Living Arrangement

Step	Retained item	*df*	AIC	BIC	logLik	deviance	χ^2	*p* value
Base Model	---	25	51262	51429	-25606	51212	---	---
Omnibus Model	AR1*FM, AR11*GS, AR14*FM	65	51285	51721	-25578	51155	34.58	0.58
Pruned Model 1	AR1*FM, AR11*GS	28	51246	51434	-25595	51190	2.49	0.11
Pruned Model 2	All items from the Prudent Model 1	27	51247	51428	-25596	51193	19.28	< .001

Note. logLik = log-likelihood; *df* = degree of freedom; AR = SDI:AR; FM = with family member(s); GS = group setting.

Table 8

Impact of Living Arrangement on Overall Self-Determination and Items (Final model)

Fixed effects	Estimate	*SE*	*t* value	*p* value
Intercept	80.93	2.17	37.23	< .001
FM	-5.48	2.34	-2.34	0.020
GS	7.41	3.16	2.35	0.020
AR1	-5.02	1.73	-2.91	0.004
AR2	-2.50	1.29	-1.95	0.052
AR3	-1.45	1.29	-1.13	0.259
AR4	1.36	1.29	1.05	0.292
AR5	-3.43	1.29	-2.67	0.008
AR6	-1.04	1.29	-0.81	0.420
AR7	-0.11	1.28	-0.09	0.930
AR8	0.59	1.29	0.46	0.647
AR9	3.12	1.29	2.42	0.016
AR10	4.68	1.29	3.64	< .001
AR11	-0.12	1.35	-0.09	0.932
AR12	-2.32	1.29	-1.80	0.072
AR13	0.73	1.29	0.57	0.571
AR14	0.21	1.29	0.16	0.873
AR15	5.87	1.28	4.58	< .001
AR16	0.33	1.28	0.26	0.794
AR17	-1.50	1.28	-1.17	0.241
AR18	2.03	1.28	1.58	0.114
AR19	-1.32	1.28	-1.03	0.303
AR20	0.85	1.28	0.66	0.509
Significant Interactions Retained in the Final Model				
FM*AR1	5.35	1.91	2.80	0.005
GS*AR11	-8.90	2.57	-3.46	< .001
Random effects	Variance			
Intercept	266			
Residual	239			

Note. Intercept = AR21; AR = SDI:AR; *SE* = standard error; FM = with family member(s); GS = group setting.

Table 9

Model Comparison on the Impact of Having a Legal Guardian

Step	Retained item	*df*	AIC	BIC	logLik	deviance	χ^2	*p* value
Base Model	---	24	51993	52154	-25973	51945	---	---
Omnibus Model	---	44	52010	52306	-25961	51922	23.07	0.29

Note. logLik = log-likelihood; *df* = degree of freedom.

Table 10

Impact of Having a Legal Guardian on Overall Self-Determination and Items (Final model)

Fixed effects	Estimate	*SE*	*t* value	*p* value
Intercept	78.25	1.90	41.25	< .001
No	0.79	2.07	0.38	0.704
AR1	-1.45	1.28	-1.14	0.256
AR2	-2.34	1.28	-1.83	0.067
AR3	-1.67	1.28	-1.31	0.192
AR4	0.75	1.29	0.59	0.558
AR5	-3.74	1.28	-2.92	0.004
AR6	-1.23	1.28	-0.96	0.335
AR7	0.37	1.28	0.29	0.769
AR8	0.09	1.28	0.07	0.945
AR9	3.60	1.28	2.81	0.005
AR10	4.63	1.28	3.62	< .001
AR11	-1.27	1.28	-0.99	0.320
AR12	-2.55	1.28	-2	0.046
AR13	0.70	1.28	0.55	0.583
AR14	0.05	1.28	0.04	0.971
AR15	5.57	1.27	4.37	< .001
AR16	0.16	1.27	0.13	0.899
AR17	-1.32	1.27	-1.04	0.300
AR18	1.74	1.27	1.36	0.173
AR19	-1.54	1.27	-1.21	0.225
AR20	0.81	1.27	0.63	0.526
Random effects	Variance			
Intercept	281			
Residual	239			

Note. Intercept = AR21; AR = SDI:AR; *SE* = standard error; No = no legal guardian.

Chapter 5: Conclusion

The purpose of this dissertation was to examine the influence of contextual factors on perceptions of self-determination in people with disabilities across the life course. Causal Agency Theory (Shogren et al., 2015) served as the theoretical framework for the three studies that comprise this dissertation. According to Causal Agency Theory, "people become agents of their own action or causal agents over their lives" (p. 256) by interacting with contexts in which they live, learn, work, and socialize. Context is defined as "an integrative concept that provides a framework for describing personal and environmental factors, supports planning, and policy development" (Shogren, Luckasson, & Schalock, 2014, p. 111). While self-determination is a general psychological construct relevant to all people with and without disabilities, how a person develops and expresses self-determination across the life course is influenced by various contextual factors (i.e., personal and environmental factors; Shogren & Wehmeyer, 2017a). As the development and expression of self-determination differs from person-to-person, both how a person perceives their own self-determination and how key supporters (e.g., family, professionals, people in community) perceive the person's self-determination can vary based on multiple contextual factors (Wehmeyer, Shogren, Little, & Lopez, 2017).

The results of this dissertation extend our understanding of the impact of contextual factors on self-determination across the life course. Specifically, Chapter 2, a meta-synthesis of research studies exploring perceptions toward self-determination of people with disabilities, highlighted differing perceptions among key stakeholders which influenced supports and opportunities provided for people with disabilities to engage in self-determined actions. As such, future research should aim to develop and enhance practices to promote self-determination across contexts and explore appropriate and sustainable training and on-going supports to meet needs across different contexts and life stages.

Chapter 3 and Chapter 4 included analyses of the impact of contextual factors on the self-determination of adults with disabilities measured by the *Self-Determination Inventory: Adult Report* (SDI:AR). The SDI:AR is a self-report measure for adults with and without disabilities ages 18 and over, and it was developed to align with Causal Agency Theory and the *Self-Determination Inventory: Student Report* (SDI:SR; Shogren & Wehmeyer, 2017b). More specifically, Chapter 3 examined the impact of personal factors on self-determination of adults with and without disabilities, and its finding suggested the influence of several personal factors on adult self-determination. Chapter 4 examined the impact of environmental factors on self-determination in adults with intellectual and developmental disabilities, establishing that environmental factors also predict significant variability in self-determination in adults with intellectual and developmental disabilities. Findings from both studies suggest multifaced relationships between personal and environmental factors and the essential characteristics of self-determination (i.e., volitional action, agentic action, action-control beliefs).

Due to the small sample sizes, an examination of interactions within and across contextual factors could not be conducted. Therefore, future research should target recruiting a larger and more diverse sample to conduct analyses of a more comprehensive array of contextual factors and their interactions in adults, given the importance of considering the interaction between contextual factors (Shogren et al., 2014). Such work will provide a more refined understanding of how contextual factors influence the expression of self-determination in adults with disabilities across the life course. This type of information will be critical when designing, implementing, and evaluating practices to promote self-determination throughout adulthood. For example, it is recommended that adults with disabilities utilize the SDI report guide (which is available upon completion of the SDI:AR) to better understand their self-determination and advocate for supports and opportunities to enhance their self-determination. Key supporters (e.g.,

families, professionals) can also use the report guide to develop and enhance environmental resources and supports. However, research is needed on the impact of enhancing understanding of self-determination on the implementation of supports for self-determination as well as self-determination and other life outcomes. Being responsive to contextual factors that could facilitate or impede the development and expression of self-determination will enable greater individualization of self-determination assessment and interventions, such as the *Self-Determined Learning Model of Instruction* (SDLMI; Shogren, Raley, Burke, & Wehmeyer, 2018) or the *Self-Determined Career Design Model* (SDCDM; e.g., Dean, Shogren, Wehmeyer, Almire, & Mellenbruch, 2019). Moreover, future research is needed to track self-determination status over time and as a function of changes throughout adulthood, as transitions continue throughout adulthood that require different self-determination skills and abilities and present different opportunities and contexts (Demick & Andreoletti, 2012; Levinson, 1986).

In sum, the findings from this dissertation add to existing research underscoring the complex array of contextual factors that impact the development and expression of self-determined actions in people with disabilities. The SDI:AR is a newly developed measure, and there is a need for ongoing work using the SDI:AR to examine the impact of contextual factors across the life course. Within a social-ecological approach to promote self-determination, understanding how contextual factors influence the development and expression of self-determination in people with disabilities across the life course can improve the supports provided to enhance the fit between the person's capacities and the environmental demands (Shogren et al., 2015; Wehmeyer, Shogren, & Thompson, 2018). To continue supporting people with disabilities to act as causal agents across the life course, future research should also explore how environmental factors can be adjusted or modified in order to provide customized opportunities and supports for people with disabilities to enhance their self-determination leading to increased

access to education, integrated employment, and community participation by designing their life in ways aligned with their goals as causal agents.

References

Dean, E. E., Shogren, K. A., Wehmeyer, M. L., Almire, B., & Mellenbruch, R. (2019). Career design and development for adults with intellectual disability: A program evaluation. *Advances in Neurodevelopmental Disorders, 3,* 111-118. doi:10.1007/s41252-018-0080-6

Demick, J., & Andreoletti, C. (Eds.). (2012). *Handbook of adult development*. Berlin, Germany: Springer Science & Business Media.

Levinson, D. J. (1986). A conception of adult development. *American Psychologist, 41*, 3-13. doi:10.1037//0003-066x.41.1.3

Shogren, K. A., Luckasson, R., & Schalock, R. L. (2014). The definition of "context" and its application in the field of intellectual disability. *Journal of Policy and Practice in Intellectual Disabilities, 11*, 109-116. doi:10.1111/jppi.12077

Shogren, K. A., Raley, S. K., Burke, K. M., & Wehmeyer, M. L. (2018). *The Self-Determined Learning Model of Instruction Teacher's Guide*. Lawrence, KS: Kansas University Center on Developmental Disabilities.

Shogren, K. A. & Wehmeyer, M. L. (2017a). Culture and self-determination. In M. L. Wehmeyer, K. A. Shogren, T. D. Little, & S. J. Lopez (Eds.), *Development of self-determination through the life-course* (pp. 159-168). Dordrecht, The Netherlands: Springer. doi:10.1007/978-94-024-1042-6_12

Shogren, K. A., & Wehmeyer, M. L. (2017b). *Self-Determination Inventory: Student Report*. Lawrence, KS: Kansas University Center on Developmental Disabilities.

Shogren, K. A., Wehmeyer, M. L., Palmer, S. B., Forber-Pratt, A. J., Little, T. J., & Lopez, S. (2015). Causal agency theory: Reconceptualizing a functional model of self-determination. *Education and Training in Autism and Developmental Disabilities, 50*, 251-263.

Wehmeyer, M. L., Shogren, K. A., Little, T. D., & Lopez, S. J. (Eds.). (2017). *Handbook on the development of self-determination*. New York, NY: Springer.

Wehmeyer, M. L., Shogren, K. A., & Thompson, J. R. (2018). Self-determination and adult transitions and supports. *New Directions for Adult and Continuing Education,* 160, 53-62. doi:10.1002/ace.2029